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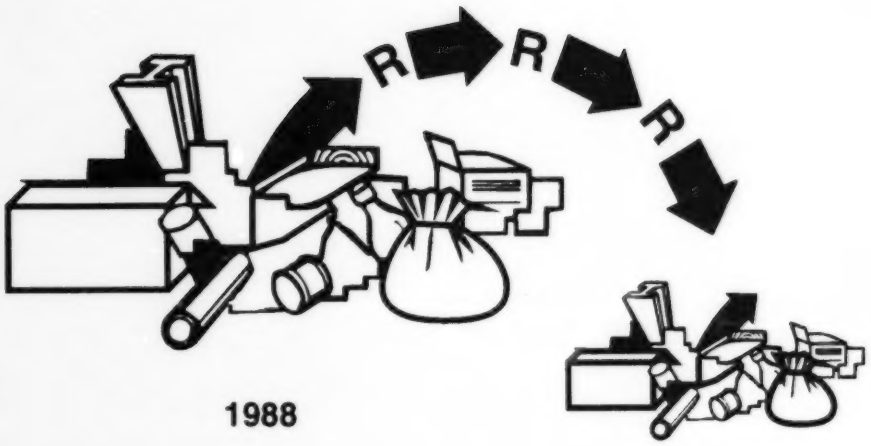
The Technical Basis for the National Packaging Protocol: Summary Report



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Review Notice

This report has been reviewed by the Waste Management Branch of Environment Canada and approved for publication. Approval does not necessarily signify that the contents reflect the views and policies of Environment Canada. Mention of trade names or commercial products does not constitute recommendation or endorsement for use.

Foreword

This report on packaging protocol contains the key analysis for a series of reports on packaging prepared for the National Task Force on Packaging. The information for this report was prepared by the following consultants: MacLaren Engineers (Project Manager); Resource Systems Management International; MWR & Associates; The Cooper & Lybrand Consulting Group; Recycling Development Corporation; VHB Research; and M.J. Ramsey & Associates.

The National Task Force on Packaging is a "multi-stakeholder" group that consists of representatives from federal, provincial, territorial and municipal governments. Representatives from environmental groups, industry and consumer groups are also included in the task force. The goal of the task force is to develop national packaging policies for Canada and recommend them to the Canadian Council of Ministers of the Environment(CCME).

In March 1990, the Canadian Council of Ministers of the Environment adopted the National Packaging Protocol that was recommended to it by the National Task Force on Packaging. The Protocol consists of six packaging policies developed by consensus and agreed to by all members of the task force. The National Packaging Protocol is included in this document as Appendix A.

Avant-propos

Le présent rapport concernant le protocole sur l'emballage renferme l'analyse fondamentale de divers rapports établis en cette matière pour le compte du Groupe de travail national sur l'emballage. Le rapport a été préparé par les firmes suivantes : MacLaren Engineers (gestionnaire de projet); Resource Systems Management International; MWR and Associates; The Cooper and Lybrand Consulting Group; Recycling Development Corporation; VHB Research et M.J. Ramsey and Associates.

Le Groupe de travail national sur l'emballage est un groupe multipartite composé de représentants du gouvernement fédéral, des provinces, des territoires et des municipalités, ainsi que de représentants de l'industrie, des consommateurs et des environnementalistes. Il avait pour but d'élaborer des politiques nationales sur l'emballage pour le Canada et de les proposer au Conseil canadien des ministres de l'Environnement (CCME).

En mars 1990, le Conseil canadien des ministres de l'Environnement a adopté le Protocole national sur l'emballage que le Groupe de travail national avait recommandé. Il s'agit de six politiques sur l'emballage mises au point et approuvées par tous les membres du Groupe de travail. Le Protocole national sur l'emballage constitue l'annexe A du présent rapport.

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Glossary

The following are definitions of terms used in the development of the National Packaging Protocol.

Package/Packaging: A material or item that is used to protect, contain or transport a commodity or product. A package or packaging can also be a material or item that is physically attached to a product or its container for the purpose of marketing the product or communicating information about the product.

Post-consumer Material: Any item that has served the purposes for which it was designed and has been discarded.

Recovery: The utilization of a waste for its energy value, or its material value for purposes other than reuse or recycling.

Recycling: The reprocessing of a manufactured material, product, by-product or other item in a manufacturing process in order to reuse its material value.

Recyclable: The quality of being composed of a material that can be used in place of a primary, raw, or virgin material in manufacturing a product.

Recycled Content: Consisting in whole or in part of secondary materials.

Reuse: The direct reapplication of a package/packaging without reprocessing.

Secondary Material: Any item that is returned to a manufacturing process as a feedstock. This can include, but is not limited to, post-consumer material.

Source Reduction: Any action to minimize the amount of material used to manufacture a package or to minimize the amount of packaging manufactured.

Waste: Any material, product, by-product or other item which has no further use in its present form and which is discarded at waste disposal facilities.

Waste Generation: The discard of material, product, by-product or other item to be managed at waste disposal facilities.

Waste Minimization: Any action to divert waste from disposal.

Introduction

1.1 General

Traditionally, effective solid waste management in Canada has been viewed as the rapid removal and disposal of society's garbage. Recently, waste disposal has been viewed in a broader environmental context, taking into consideration the need to effectively manage resources to sustain both the integrity of our environment and the continued development of our economy.

In light of these new perspectives, governments at all levels across the country are developing broad-based strategies for waste reduction, reuse and recycling. Many jurisdictions have identified objectives for diverting wastes from disposal. However, municipalities and provinces have consistently identified the need for action on a national level with regard to packaging in order to achieve waste diversion objectives.

In April 1989, the Canadian Council of Resource and Environment Ministers (CCREM) - now the Canadian Council of Ministers of the Environment (CCME) - stated:

"Waste management is an urgent and pressing national problem. Some jurisdictions are already running out of landfill sites, in part because Canada is one of the most wasteful nations. For this purpose Ministers have instructed the Waste Management Committee of CCREM to develop a packaging policy for Canada within a broad review of solid waste management opportunities including government purchasing and recycling policies. It was agreed that targets and schedules for waste minimization be established including a fifty percent (50%) reduction in waste generation by the year 2000."

A National Task Force on Packaging has since been established to develop a national packaging policy consistent with the CCME requirements. The task force has adopted a multi-stakeholder approach to accomplish this objective. Consequently, the task force included representation from each province and territory, relevant federal government agencies, municipalities, industry, environmental groups and consumer organizations. The task force has been chaired by Environment Canada.

The National Task Force on Packaging has commissioned a series of reports to research and present the data necessary to develop a national packaging policy. (These reports are listed in the Bibliography.) This document provides an overview of the technical data and analyses detailed in those reports.

1.2 The Need for Packaging

Packaging plays a vital role in the delivery of high quality products to industrial and consumer markets and in providing information about the product. The most important function of packaging is to protect products, particularly during transportation and storage. The packaging material and design varies with specific products, e.g., sensitive electronic or health care products require packaging that is highly

resistant to impact, whereas industrial products require less sophisticated packaging. Growing consumer concerns about product tampering are contributing to more packaging on some products to ensure health and safety considerations are met.

By law, certain product information, such as ingredients, directions for use and safety considerations, must be provided to consumers. Regulations also specify requirements for bilingual labelling on the packaging. The more information required on a package, the more packaging will likely be required.

Packaging is also becoming increasingly important in marketing products both in terms of their convenience for storage and handling and in making the product more acceptable to consumers.

Clearly, packaging has many benefits; however, its extensive use and widespread disposal in landfill sites is now recognized as a major waste management problem. The need, therefore, is not necessarily to eliminate packaging so much as to reduce its negative impacts on the environment. This can be done through applying the principles of source reduction, reuse and recycling to packaging.

Section 2

Use of Packaging in Canada

This section provides an analysis of the amount industry spends on packaging and the estimated amount of different types of packaging used by each industry sector. This shows which industry sectors are the major users of packaging and also helps focus subsequent analyses on the approaches that can be taken to divert specific packaging used by particular industries from the wastestream.

2.1 The Data Base

The data base for identifying how packaging is used in Canada is the Statistics Canada time-series data for 1979 to 1986. During this period, Statistics Canada collected data on annual expenditures for different types of packaging according to industry sector.

There are several advantages to using the Statistics Canada data. It is the only data source that covers all packaging purchased by Canadian industry over a period of several years. In addition, the data is nonpartisan and is highly credible to all stakeholders involved in developing and implementing a national packaging policy. Finally, the data base breaks down packaging expenditures according to the SIC (Standard Industrial Classification) group which provides the accuracy needed to identify packaging use in Canada.

The Statistics Canada data base also has several shortcomings. For example, it records packaging used by Canadian industry in terms of dollar value rather than in tonnage. Tonnage would have been a more useful measure as the basis for developing a national packaging policy.

In addition, the data do not record the trade of packaging as packaging-in-use. As a result, the data base is only a record of Canadian expenditures on packaging and cannot be regarded as a comprehensive record of packaging use in Canada. Canada's traditional position as a net importer of finished products (and therefore the packaging that goes with them) would suggest that this country is also a net importer of packaging-in-use. The accuracy of this hypothesis is unknown.

Because Statistics Canada changed the data collection format to adopt an internationally harmonized system, data for the year 1988 were not available at the time of the study. As well, the new reporting format would limit the comparability of the 1986 and 1988 data. For these reasons, projecting 1988 packaging expenditures from the available data from Statistics Canada is considered a reasonable approach to portraying the application of packaging in that year.

Interpretation of the data base is complicated by two other factors. From 1979 to 1986, the reporting of packaging expenditure data to Statistics Canada was subject to the *Statistics Canada Confidentiality Act*. As a result, some information could not be disclosed for SIC groups with too few respondents. While this may preclude analysis of some details of packaging use, broad patterns of expenditures on packaging can still be analyzed.

Finally, the classifications under which packaging expenditures have been reported have changed in some instances. Since 1983, both the food and beverage industries and the rubber and plastics industries have been required to report packaging expenditures in two separate categories instead of in a combined category as was done previously. The classification of companies within the primary textile, textile products and clothing industries sectors also changed in 1983 as did the classification of companies between the machinery industry and transportation industry sectors.

2.2 *Industry Expenditures on Packaging*

Table 1 indicates how much industry spent on each type of packaging in 1979 and 1986 and projects how much will be spent in the year 2000. As this table indicates, annual growth rates varied considerably between 1979 and 1986. Overall, however, the expenditures on packaging increased an average of 8.7% per year. If this growth rate is projected to the year 2000, the amount spent on packaging will be approximately $18 billion.

Based on the growth projection identified in Table 1, in the year 2000, more money will be spent on plastic containers, bottles and carboys than any other type of packaging. When plastic transparent film is added to this category, approximately 25% will be spent on plastics. Paper/paperboard-based packaging (including folding/set-up boxes, corrugated cartons, paper bags, and paper and paperboard) will continue to dominate despite its generally slower growth rate between 1979 and 1986. Approximately 45% of the total spent on packaging will be spent on paper/paperboard-based packaging by the year 2000.

Figure 1 indicates packaging material costs as a percentage of total costs of materials and supplies used by manufacturers. This fluctuated at around 3.5% between 1979 and 1986. Although data are not available after 1986, discussions with industry indicate that this percentage has not changed much in recent years.

2.3 *Amount of Packaging Used in Canada*

The types of packaging used by each industry sector in 1986 are summarized in Table 2. Clearly, most types of packaging are used by most sectors although some, such as cans, barrels/drums, glass, paper bags and plastic containers, are not used by several sectors.

Table 3 provides estimates of the amount of packaging used by industry in 1988, as well as the amount of packaging used in 1988 by each sector per $1000 spent on packaging. The methodology and data used to develop estimates of the tonnage of packaging used by industry is provided in "Packaging Application in Canada" (MacLaren Engineers Inc., 1990). The data are also included in "Packaging Reduction, Reuse and Recycling Technology Options" (MacLaren Engineers Inc., 1990).

As shown in Table 3, the food and beverage industries accounted for an estimated 50% of tonnage of packaging used in 1988 and an estimated 58% of dollar expenditures. As a group, the top five sectors in Table 3 in terms of tonnage accounted for an estimated 72% of all packaging by weight and 80% of expenditures on packaging in 1988.

The data regarding the estimated tonnes of packaging used by each industry sector per $1000 spent must be carefully interpreted. A high ranking does not necessarily imply

Table 1 Sales of Packaging Types for 1979 and 1986 and Projected Sales for the Year 2000

Packaging Type	1979 ($'000)	1979 % Total	1986 ($'000)	1986 % Total	Range of Annual Growth 1979-1986 (%)*	Average Annual % Growth	2000 ($'000)	2000 % Total
Folding and Set-up Boxes	384 806	12.3	673 593	12.5	(0.1) - 28.5	8.7	2 166 000	12.0
Corrugated Boxes and Cartons	592 388	18.9	996 798	18.5	5.7 - 13.4	7.7	2 816 000	15.6
Cans, Metal	562 057	17.9	910 525	16.9	(1.6) - 14.3	7.3	2 276 000	12.6
Barrels and Drums, Metal (One-way Shippers)	37 047	1.2	47 566	0.9	(3.1) - 11.9	3.8	77 000	0.4
Glass Bottles and Carboys	296 695	9.4	434 568	8.1	(1.3) - 13.5	5.7	893 000	4.9
Paper Bags, All Kinds	62 807	2.0	91 997	1.7	(1.0) - 14.9	5.7	189 000	1.0
Paper and Paperboard	94 377	3.0	200 742	3.7	(2.2) - 72.1	13.4	1 026 000	5.7
Wood	94 293	3.0	137 736	2.6	(15.7) - 17.4	6.0	294 000	1.6
Metal/Plastic (Closures, Staples, Strapping, Wire)	167 880	5.3	449 437	8.3	9.1 - 23.2	13.6	2 358 000	13.1
Plastic Containers, Bottles and Carboys	136 303	4.3	374 715	6.9	12.2 - 23.6	17.3	2 982 000	16.5
Transparent Film (Bags, Sheets and Rolls)	206 698	6.6	394 610	7.3	(3.6) - 21.6	10.2	1 395 000	7.7
Foil/Labels/Tags/Wrappers	218 511	7.0	293 959	5.4	(12.4) - 16.6	7.4	692 000	3.8
Miscellaneous	285 882	9.1	391 719	7.3	(20.9) - 15.6	6.6	899 000	5.0
Grand Total	3 139 744	100.0	5 397 965	100.0	(2.9 - 13.6)	8.7	18 063 000	100.0

* Bracketed values indicate negative annual growth

Note: Projections do not account for effects, if any, by GATT, FTA and any other future initiatives which may affect the manufacturing sector.
Values do not include imports of "packaging-in-use".

"over-packaging". It may simply mean that heavy, but relatively inexpensive packaging materials are used. To help illustrate this point, five of the top six industries in this ranking use predominantly wood as packaging material. The four largest users of packaging by tonnage rank among the bottom half of industry sectors when ranked according to tonnes of packaging per $1000 of expenditure, indicating relatively expensive packaging in relation to its weight.

Table 4 identifies the percentage of each type of packaging used by the 13 largest industry sectors whose total packaging use in 1988 is estimated to have exceeded 95,000 t. These industry sectors used 91.4% of the estimated tonnage of packaging used in Canada in 1988. As can be seen in Table 4, most industry sectors used predominantly one or two packaging materials (in terms of tonnage). Among non-consumer industry sectors, wood is a predominant packaging material. Wood makes up at least half the tonnage of packaging used by industrial operations in printing and publishing, primary metal, fabricated metal, machinery and transportation equipment sectors, and between one third and one half of that used by the electrical/electronic products and non-metallic mineral products industries.

On the other hand, it would appear from Table 4 that wood is not used much in the food and beverage industries (based on their annual expenditures on wood packaging). Discussions with the wood packaging industry, however, indicate that these industries actually use 40% of wood packaging produced. This discrepancy is

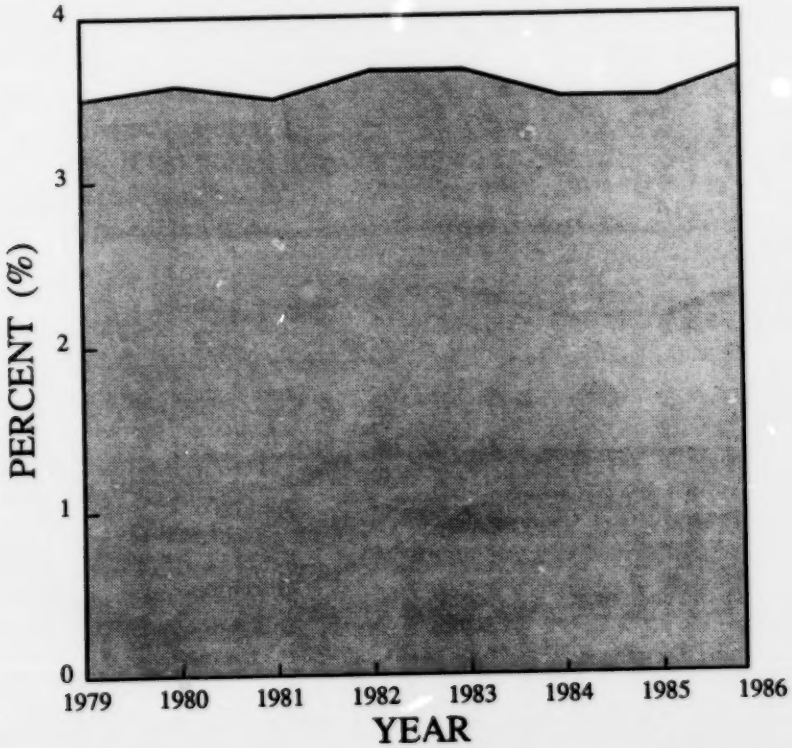

Figure 1 **Value of Packaging Material as a Proportion of Total Cost of Manufacturing Materials and Supplies**

Table 2 Types of Packaging Used by Industry Sector - 1986

Industry Sector	Packaging Type: Folding and Set-Up Boxes, Paperboard	Corrugated Boxes and Cartons	Cans (Metal)	Barrels and Drums(Metal, One-way Shippers)	Glass Bottles, Jars and Carboys	Paper Bags, All types
Food Industries	X	X	X	X	X	X
Beverage Industries	X	X	X	-	X	-
Tobacco Products Industries	X	X	X	-	-	-
Rubber Products Industries	X	X	X	X	-	-
Plastic Products Industries	X	X	-	X	-	-
Leather and Allied Industries	X	X	-	-	-	-
Primary Textile Industries	X	X	-	-	-	X
Textile Products Industries	X	X	-	-	-	-
Clothing Industries	X	X	-	-	-	-
Wood Industries	X	X	-	-	-	X
Furniture and Fixture Industries	X	X	-	-	-	X
Paper and Allied Products Industries	X	X	X	-	-	X
Printing, Publishing and Allied Industries	X	X	-	-	-	-
Primary Metal Industries	X	X	-	X	-	X
Fabricated Metal Products	X	X	X	X	-	X
Machinery Industries	X	X	-	X	-	-
Transportation Equipment Industries	X	X	-	-	-	-
Electrical/Electronic Products Industries	X	X	X	-	-	-
Non-metallic Mineral Products Industries	X	X	X	X	-	X
Refined Petroleum and Coal Products Ind.	X	X	X	X	-	-
Chemical and Chemical Products Industries	X	X	X	X	X	X
Other Manufacturing Industries	X	X	X	X	-	X

Table 2 Types of Packaging Used by Industry Sector - 1986 (Cont.)

Industry Sector	Packaging Type:						
	Paper and Paperboard	Wood (Pallets, Ski Boxes, Barrels, Kegs)	Metal/Plastic (Closures, Staples, Wire Strapping)	Plastic (Containers, Bottles, Carboys)	Transparent Film (Bags, Sheets, Rolls)	Foil, Labels Tags, Wrapper	Miscellaneous
Food Industries	X	X	X	X	X	X	X
Beverage Industries	-	X	X	X	X	X	X
Tobacco Products Industries	X	-	X	X	X	X	X
Rubber Products Industries	X	X	X	X	X	X	X
Plastic Products Industries	X	X	X	-	X	X	X
Leather and Allied Industries	X	-	-	-	X	X	X
Primary Textile Industries	X	X	X	X	X	X	X
Textile Products Industries	X	X	X	X	X	X	X
Clothing Industries	X	-	X	-	X	X	X
Wood Industries	X	X	X	-	X	X	X
Furniture and Fixture Industries	X	X	X	-	X	X	X
Paper and Allied Products Industries	X	X	X	-	X	X	X
Printing, Publishing and Allied Industries	X	X	X	-	X	X	X
Primary Metal Industries	X	X	X	-	X	X	X
Fabricated Metal Products	X	X	X	X	X	X	X
Machinery Industries	X	X	X	-	X	X	X
Transportation Equipment Industries	X	X	X	-	X	X	X
Electrical/Electronic Products Industries	X	X	X	X	X	X	X
Non-metallic Mineral Products Industries	X	X	X	X	X	X	X
Refined Petroleum and Coal Products Ind.	-	X	X	X	-	X	X
Chemical and Chemical Products Industries	X	X	X	X	X	X	X
Other Manufacturing Industries	X	X	X	X	X	X	X

Table 3 Estimated Packaging Use in Canada - 1988 (000's tonnes)

Industry Sector	Total Tonnage	Percentage of Tonnage Used (%)	Rank by Tonnage Used	Projected Packaging Expenditure 1988 $000's	Ranking by Expenditure	Tonnes of Packaging per $1000 of Expenditure	Ranking by Packaging per $1000 of Expenditure
Food Industries	1 855 271	32.5	1	2 389 000	1	0.78	17
Beverage Industries	1 004 985	17.6	2	1 333 000	2	0.75	16
Tobacco Products Industries	109 149	1.9	12	149 000	7	0.73	18
Rubber Products Industries	23 465	0.4	19	22 000	21	1.07	12
Plastic Products Industries	131 396	2.3	10	109 000	10	1.21	10
Leather and Allied Products Industries	21 503	0.4	21	21 000	22	1.02	15
Primary Textile Industries	20 017	0.4	22	34 000	19	0.59	21
Textile Products Industries	63 330	1.1	16	51 000	17	1.24	9
Clothing Industries	59 583	1.0	17	58 000	15	1.03	14
Wood Industries	77 023	1.4	15	120 000	8	0.64	20
Furniture and Fixture Industries	89 223	1.6	13	74 000	12	1.21	11
Paper and Allied Products Industries	439 139	7.7	4	414 000	4	1.06	13
Printing, Publishing and Allied Industries	166 068	2.9	8	55 000	16	3.02	1
Primary Metal Industries	79 739	1.4	14	62 000	13	1.29	8
Fabricated Metal Industries	164 619	2.9	9	92 000	11	1.79	4
Machinery Industries	45 154	0.8	18	25 000	20	1.81	3
Transportation Equipment Industries	202 275	3.5	6	116 000	9	1.74	5
Electrical/Electronic Products Industries	199 149	3.5	7	152 000	6	1.31	7
Non-metallic Mineral Products Industries	242 354	4.2	5	153 000	5	1.58	6
Refined Petroleum and Coal Products Ind.	19 790	0.3	20	45 000	18	0.44	22
Chemical and Chemical Products Industries	571 880	10.0	3	880 000	3	0.65	19
Other Manufacturing Industries	119 431	2.1	11	62 000	13	1.93	2
Total	5 704 543	100		6 416 000		0.89	

Table 4 Percentage of Total Packaging Use by Industry Sector - 1988

Industry Sector	Folding and Set-Up Boxes (% of total pkg for this industry)	Corrugated Cardboard Boxes and Cartons (% of total pkg for this industry)	Cans, metal (% of total pkg for this industry)	Barrels and Drums (% of total pkg for this industry)	Glass Bottles and Carboys (% of total pkg for this industry)
Food Industries	19.5	24.4	9.1	<0.1	16.3
Beverage Industries	3.9	17.5	16.0	0	48.7
Tobacco Products Industries	79.3	8.2	3.4	0	N/A
Plastic Products Industry	19.7	44.3	0.0	0.9	0
Paper and Allied Products Industries	15.2	24.7	N/A	0	0
Printing, Publishing and Allied Industries	8.4	11.4	0.0	0	0
Fabricated Metal Industries	8.7	24.3	N/A	0	0
Transportation Equipment Industries	8.7	32.4	0.0	1.8	0
Electrical/Electronic Products Industries	9.4	42.1	N/A	N/A	0
Non-metallic Mineral Products Industries	<0.1	39.7	<0.1	N/A	0
Chemical and Chemical Products Industries	15.4	19.9	8.5	2.8	11
Other Manufacturing Industries	14.9	27.2	0.3	43.3	N/A

Note: N/A indicates that data were not available (*Statistics Canada Confidentiality Act*).

These 12 Industry Sectors used an estimated 91.4% of packaging in Canada in 1988.

Imports of packaging-in-use are not included.

Table 4 Percentage of Total Packaging Use by Industry Sector - 1988 (Cont.)

Industry Sector	Wrapping Paper Products (% of total pkg for this industry)	Wood (% of total pkg for this industry)	Plastics (% of total pkg for this industry)	Transparent Film (% of total pkg for this industry)	Foil/Labels Tags/Wrappers (% of total pkg for this industry)
Food Industries	8.2	0.6	8.7	12.6	0.1
Beverage Industries	N/A	1	12.1	<0.1	0.6
Tobacco Products Industries	N/A	0	4.2	2.7	2.1
Plastic Products Industry	5.8	18.9	3	7.4	<0.1
Paper and Allied Products Industries	26.7	19.8	7.7	5.7	<0.1
Printing, Publishing and Allied Industries	4.8	68.7	4.7	1.8	<0.1
Fabricated Metal Industries	1.4	57.8	5.8	0.4	<0.1
Transportation Equipment Industries	N/A	53.2	4	1.7	<0.1
Electrical/Electronic Products Industries	2.6	37.8	7.1	0.5	0.4
Non-metallic Mineral Products Industries	10	40.1	3.8	5.9	<0.1
Chemical and Chemical Products Industries	2.8	19.6	17.1	2.1	0.8
Other Manufacturing Industries	8.9	2.1	1.8	1.2	<0.1

Note: N/A indicates that data were not available (*Statistics Canada Confidentiality Act*).

These 12 Industry Sectors used an estimated 91.4% of packaging in Canada in 1988.

Imports of packaging-in-use are not included.

explained by the fact that the food and beverage industries use reusable wooden pallets which keeps their annual spending on new pallets relatively low. Other industrial sectors that use "one-way" pallets spend considerably more on wood packaging each year.

Unlike wood packaging, corrugated cardboard boxes and cartons do not generally dominate specific industry sectors as a proportion of total tonnage of packaging used; however, a wider range of sectors use these materials than wood. Among those sectors which use predominantly wood in terms of tonnage, corrugated cardboard boxes and cartons generally rank second. In the food industry, it is estimated that corrugated cardboard boxes and cartons make up an estimated quarter of the annual tonnage of packaging purchased.

Folding and set-up boxes are also used by a wide variety of industries, but typically make up only a relatively small proportion of the tonnage of packaging used by each industry sector. The principal exception to this is the tobacco products sector, where these materials made up almost 80% of the estimated tonnage of packaging used in 1988.

Plastics are not used extensively by any of the industries listed in Table 4. Plastics and transparent film combined, however, make up at least 5% by weight of the packaging used by 11 of the 12 industries and approximately 20% of the packaging used by two of these industries: food, and chemical and chemical products. Specifically, in the food industry, plastics are estimated to be the second most used packaging material by weight after corrugated cardboard boxes and cartons; and in the chemical and chemical products industry, plastics and transparent film are used as much as corrugated cardboard boxes and cartons.

The remaining packaging materials tend to be used either by a smaller range of industry sectors, or as a small proportion of the packaging used by all industry sectors. Glass is used by only three industry sectors, but is estimated to make up almost half the packaging weight of one of these, the beverage industry. Similarly, metal cans and barrels/drums are not used much in most sectors, although metal cans are significantly used in three sectors. Notably, barrels and drums are a major proportion of the tonnage of packaging used by "other manufacturing industries", probably because drums are used to contain raw materials and liquid wastes.

Finally, foil/labels/tags/wrappers are a very minor component of the packaging used by all industry sectors. In the tobacco products sector, they are estimated at 2% of packaging used, and in the chemical and chemical products sector, which includes the pharmaceuticals and toiletries industries, they make up about 1% of packaging used.

Section 3

Options for Reducing, Reusing and Recycling Packaging

3.1 Identifying Options

Reduction, reuse and recycling initiatives that help to divert packaging from landfill can be either technological or non-technological in nature. Technological initiatives tend to apply to specific materials, increasing their potential for reduction, reuse or recycling. Non-technological initiatives typically focus on general management principles that affect packaging design and resulting quantities of waste. While both types of initiatives need to be considered, this report focuses primarily on technological options.

The information in this section has been prepared in consultation with packaging suppliers and users. In many cases, however, it is not possible to precisely identify the effect of a particular reduction, reuse or recycling initiative. In these cases, the most likely results have been discussed with industry and a consensus obtained.

3.2 Potential for Technological Options

Consultation with industry and research to estimate the technological potential for applying reduction, reuse and recycling to packaging has been undertaken for each packaging material. This process has identified both opportunities for and obstacles to reduction, reuse and recycling of the major types of packaging materials. These obstacles and opportunities are detailed in the report "Packaging Reduction, Reuse and Recycling Technology Options" (MacLaren Engineers Inc., 1990).

Table 5 defines the estimated maximum level of reduction, reuse and recycling that could be achieved. These estimates should not necessarily be considered targets, however, since the development of such targets must also take into consideration legislative, economic, social and other factors, discussed in other sections of this report. Rather, these estimates identify the technological capabilities that exist in Canada for reducing, reusing and recycling packaging. In addition, these estimates are based on best available data, which are not necessarily comprehensive.

Table 5 indicates an overall reduction potential of 9% by weight; that is, in 1988, the technology existed to reduce the weight of packaging used by an estimated 9%. Technologically, an estimated one third of packaging by weight could be designed as reusable packaging in current applications. In 1988, an estimated 11% of packaging was actually designed to be reusable. Approximately three-quarters of packaging by weight could be recycled from a technological perspective. In 1988, an estimated 18% of discarded packaging was actually recycled.

Industries generally agree that the reduction potential identified for each packaging material in Table 5 is technologically possible. In all cases, estimated reduction potential is based on producing containers with thinner walls.

Reuse potential is more difficult to measure. In Table 5, reuse potential is based on the technological feasibility of reusing existing

Table 5 Estimated Potential for Reduction, Reuse and Recycling for Various Packaging Materials* - 1988

Material	Reduction		Reuse		Recycling	
	Percentage (%)	Quantity (t)	Percentage (%)	Quantity (t)	Percentage (%)	Quantity (t)
Paper	14	(392 000)	20	(563 000)	80	(2 252 800)
Steel	5	(19 000)	8	(30 400)	100	(380 000)
Aluminum	5	(1 500)	0	(0)	80	(60 400)
Plastics	5	(41 000)	12	(98 760)**	50	(411 500)
Glass	10	(73 500)	30	(220 000)***	75	(551 250)
Wood	<1	(Minimal)	90	(714 000)	98	(778 120)
Overall Technological Potential	9	(527 000)	33	(1 847 160)	78	(4 434 070)
Existing Packaging Management			11	(577 000)	18	(961 000)

* Potential for reducing, reusing and recycling composites has traditionally been low. Composites may be lighter than other materials, so their environmental benefits to date have been primarily in areas such as reduction of energy required for transportation and reduction in materials required for manufacture. New efforts are now underway to reduce, reuse and recycle composites, notably by Tetra-Pak with respect to aseptic packaging.

** In many applications, reuse could be increased by redesigning packaging. Health regulations now restrict the reuse of plastics in the food and beverage industries.

*** This figure approximates current reuse of beverage containers.

packaging materials in their current applications. In some cases, products would have to be redesigned in order to achieve the potential for reuse identified in Table 5. With wood packaging, for example, all pallets could be reusable if manufactured from dense-grained tree species. The glass industry maintains that reuse levels higher than that indicated in Table 5 are not possible. Others, however, have suggested that the technological potential for glass reuse is at least double the estimate in Table 5 if glass containers were redesigned and appropriate infrastructures for reuse were established.

Generally, neither the packaging material sectors nor consumer products industries find reusable containers economically feasible. For the packaging material sectors, reuse means that less packaging would be produced and their sales would drop. The glass industry is particularly sensitive to this in light of strong competition from other

packaging materials. For the consumer products industry, reuse is not generally an attractive option because of the costs that would be incurred if retail outlets were expected to handle reusable consumer packaging. This is already a concern for the grocery industry with respect to returnable soft-drink containers.

On the other hand, reusable packaging is attractive to many industrial and commercial users of packaging. The grocery industry has been a key force in the widespread adoption of reusable pallets for delivering consumer products in bulk at wholesale and retail outlets. The automotive industry continues to investigate the standardization of packaging for automotive components, which would create new opportunities for reusable packaging.

There is a consensus on the high technological potential for recycling. Industry already has well defined technical standards for the amount and specifications of secondary material that can be used in manufacturing new products. The estimated current recycling potential for plastics is low compared to other materials due to the strict technical requirements for recycling single-resin plastics. In addition, the recycling technology for mixed-resin plastics in Canada is still emerging. As new plastics recycling technologies now being demonstrated in Canada become proven, potential for plastics recycling will rise.

It should be noted that the tonnage data provided in Table 5 identify the estimated results that would have occurred in 1988 for reduction, reuse and recycling activities. If the total estimated reduction had been achieved, however, a reduced weight of packaging would have been available for reuse and recycling opportunities. In addition, the realization of reuse opportunities may severely constrain weight reduction opportunities associated with thinner container walls, since stronger packaging may be required to withstand the rigours of reuse.

3.3 Potential for Non-technological Options

Non-technological options for reducing, reusing and recycling packaging include standardization of packaging, bulk dispensing systems, increasing product concentration, eliminating unnecessary packaging, simplifying package design, and converting from disposable to reusable containers. The potential effects of non-technological options, however, are more difficult to measure than those of technological options. These options may be more effective, depending on the extent to which they are implemented.

In order to apply non-technological options to packaging, decisions must be made about packaging systems themselves and, in some cases, about the products they contain. For this reason, it is not possible to measure their potential effect. Also, as with technological options, the extent to which non-technological options are implemented depends on economic, legislative, social and other factors.

Section 4

Environmental Life Cycle Analysis

A national packaging policy must focus on reducing the overall negative effect of packaging on the environment. As a general rule, the principles of reduction, reuse and recycling are useful in guiding a program for environmentally-preferred packaging. Sometimes, however, applying one of these principles could have negative consequences on the environment. For example, applying the principle of reduction and producing a lighter weight package may not necessarily be less damaging to the environment if manufacturing the lighter package increases toxic pollution or if the lightweight package is not reusable or recyclable.

Ideally, the economic costs of producing and managing a package should accurately reflect the full environmental effects. For example, if extracting a raw material to produce a package leads to erosion and disruption of habitat, these environmental effects are not directly assigned to the extracted resource. Likewise, the full cost of managing a package after its use is not necessarily reflected in its cost to industry and consumers. Under current pricing structures, the price of packaging cannot necessarily be used to determine which packaging is easier on the environment. This requires more detailed analysis.

Environmental life cycle analysis is required to assess the environmental effects of a product over its entire life cycle, from raw material extraction to post-use management. Thus, a product's total effect on the environment can be assessed. For the purposes of this report, this technique makes it possible to determine which packaging has the least impact on the environment.

4.1 Generic Life Cycle of Packaging Materials

While each finished packaging product undergoes a unique process that transforms it from raw materials in the ground to waste requiring disposal, all pass through a series of similar stages. Thus, life cycle effects can be generally analyzed and the way in which reduction, reuse and recycling fit within the life cycle framework can be determined. This generic series of steps is illustrated in Figure 2.

4.2 Impacts of Concern

Impacts of concern include, but are not necessarily limited to, those that affect human health, social well-being/quality of life, natural ecosystems, global climate, and future availability of resources.

Evaluating these impacts requires technical analysis and resolving questions of value. Technical analysis relates to estimating the actual impacts. For example, how does a particular emission affect human health, or how does a particular packaging management approach affect natural ecosystems?

Questions of value focus on weighing the relative significance of one type of effect against another. For example, does a particular atmospheric emission represent a greater or lesser threat to the environment than the extraction of a natural resource, or is

the loss of quality of life more or less important than effect on global climate? Ultimately, these comparisons are questions of value and cannot be decided through technical evaluation. If the analysis is to be broadly accepted and useful to decision-making, then the relative values of various types of impacts must be broadly accepted, or have been determined through a credible process.

Decisions must also be made about how far to carry consideration of environmental impacts. For example, when considering the environmental impacts of manufacturing glass bottles, should the environmental impacts of the equipment used to extract sand, the manufacture of such equipment, and building the factory where it is manufactured, all be included in the assessment? Obviously, the analysis should not include environmental impacts that are likely to be minor.

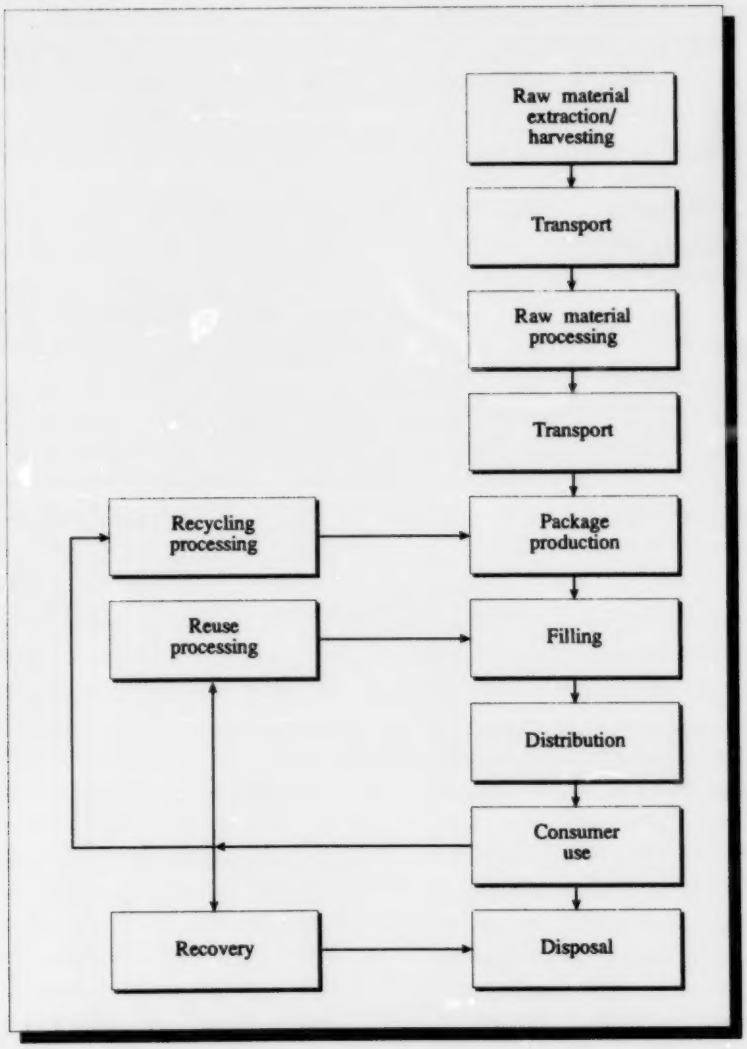

Figure 2 **Steps in Package Production, Use and Disposal**

4.3 Application in a National Packaging Policy

A national packaging policy that seeks to encourage the reduction, reuse and recycling of packaging will press stakeholders to undertake activities in which they may not otherwise willingly engage. To be effective, therefore, a national packaging policy must be infused with the credibility associated with environmental objectives. Otherwise, neither the voluntary action that comes with consensus, nor the political support essential for effective regulation, will be forthcoming. The political difficulties associated with siting new landfills should not be considered in isolation as a credible basis for taking action to minimize the adverse environmental impacts of packaging. The assessment of net environmental benefit associated with diverting packaging from disposal requires the broader perspective provided by environmental life cycle analysis.

A full environmental life cycle analysis is complex and expensive to perform but the broad perspective it provides is important to ensure that applying the principles of reduction, reuse and recycling to packaging results in net environmental gains. Environmental life cycle analysis is also an essential means of simplifying the key components into something that can be applied easily and quickly to practical problems. Possible means for achieving this include:

- developing standard, generic data. For example, all users of glass could be provided with the upstream environmental impacts of glass, and they would only need to add the impacts of their own processes;

- developing computerized software for undertaking environmental life cycle analysis. This software should be simple to use, while ensuring comprehensive coverage, consistency and clarity; and,

- drawing of generalized, but still credible conclusions from the pilot studies. Pilot studies might identify the packaging options that are preferable under a prescribed set of considerations.

These options could be incorporated into an easy-to-follow guide that a packager could use to evaluate packaging options from an environmental perspective. If the guide is to be credible, however, it must be based on the more detailed methodologies and data discussed in this section.

Section 5

Economic Considerations

Economic considerations affect the extent to which reduction, reuse and recycling can be applied to packaging. The development and implementation of a national packaging policy must consider the economic situation of the packaging industry and the marketplace in which it operates.

5.1 The Structure of the Packaging Industry

The packaging industry consists of a number of diverse sectors, including producers of packaging material, such as paper, glass, plastic, metals and wood, and industries that convert these materials into a wide range of packaging products. These sectors differ in terms of size, labour-to-capital ratios, regional distribution, ownership, structure, and trade sensitivity. A packaging policy will therefore affect each of these sectors differently.

The packaging industry in Canada is focused primarily on the domestic market, with only some of the paper-based packaging sector exporting a significant portion of its shipments. Traditionally, tariffs have played an important role in protecting the domestic market. While tariffs into the United States have generally been lower, Canadian packaging products have not usually been marketed there due to the size and competitiveness of the U.S. packaging industry. Several sectors of the Canadian packaging industry are potentially vulnerable to competition from the United States due to higher costs. To ensure a level playing field, the Canadian packaging sector wants to see the same requirements for environmentally-preferred packaging placed on both domestically-produced and imported packaging.

Under the Canadian-U.S. Trade Agreement (CUSTA) and the General Agreement on Tariffs and Trade (GATT), the Canadian marketplace will become more and more international. This may be beneficial to some sectors and a disadvantage to others which have been protected by tariffs. Generally, it is anticipated that involvement in CUSTA will decrease input costs, such as packaging, raw materials and equipment, but on the other hand, will increase competition. Thus, improving efficiency and developing new markets will be important elements of the adjustment process. It is likely, therefore, that some degree of rationalization and specialization of production runs will occur in Canada, particularly in sectors where foreign ownership is high.

5.2 The Importance of Package-fillers

Packaging is produced in response to demand by package-filler industries. Even though packaging manufacturers have some freedom in choosing packaging materials, it is primarily the package-fillers that determine the packaging characteristics they require. Sometimes package-fillers make decisions completely independently. For example, the grocery products industry competes for the consumer's attention in an environment where visibility and maximization of shelf space is of key importance. Therefore, they demand packaging designs and formats that satisfy these imperatives. The packaging associated

with other products sold at the retail level is also sensitive to these conditions.

On the other hand, package-fillers may be highly influenced by external pressures when selecting packaging. At the retail level, satisfying marketing imperatives must also be consistent with consumer acceptance of a package. Hence, a package may need to maximize shelf space and be attractive to consumers, but it may also need to be recyclable.

In the case of industrial packaging, visibility and maximizing shelf space are not relevant, while product protection and efficiency of transportation are. Increasingly, however, purchasers of individual packaging are demanding that products be delivered in packaging that is either reusable or recyclable.

In responding to the packaging demands of consumer and industrial markets, package-fillers in turn place demands on suppliers of packaging material to provide packaging that meets their demands. Clearly, the package-filler will play a crucial role in meeting the objectives of a national packaging policy since it is the filler who determines what packaging will be used.

5.3 The Ability of Industries to Respond to a National Packaging Policy

Within industry sectors and sub-sectors, there will be differences between firms in terms of their ability, both financial and technical, to respond to a national packaging policy. For example, industries consisting of a few large enterprises will not respond in the same way as those consisting of many smaller firms. This could also lead to a situation whereby these smaller firms prove too numerous to regulate and the larger firms may end up assuming a disproportionately large share of the effort to meet the objectives of a national packaging policy.

The extent to which industry will apply the principles of reduction, reuse and recycling will be based on its ability and willingness to absorb costs towards this objective, and the extent to which it will result in increased profitability. It will probably cost less and have more impact to apply these principles to industrial/commercial packaging, which makes up over half of all packaging, than to apply them to consumer packaging.

5.4 Economic Consequences

The economic consequences of a national packaging policy will greatly depend on how the policy is planned and implemented. If it is well planned and implemented, significant economic benefit could result. This cannot be measured until it has been determined which groups of packaging producers and package-fillers will be most affected by such a policy, the actions these companies will be expected to take and how soon they will have to take them. When this is known, the economic consequences of a national packaging policy can be identified and strategies worked out that minimize negative economic effects and maximize opportunities for growth.

5.5 Flexibility and Timing

A national packaging policy must be flexible in order to accommodate the diversity of both the packaging producer and key user industries. A rigid and uncompromising stance coupled with regulation will result in a more difficult and costly adjustment process. Such an approach would be detrimental to industry and could dampen

industry support for a national packaging policy.

Timing is one of the critical issues in implementing a national packaging policy. Such a policy must be sensitive to the constraints and competitive pressures under which Canadian industry operates. In short, industry must be given sufficient time to adapt to new policies.

As already indicated, however, it is not possible to more precisely define how a national packaging policy should be implemented until specific options for future direction of the policy have been determined.

Section 6

Legislative Considerations

A central consideration in developing a national packaging policy is the role of legislation in achieving the objectives of such a policy. Legislative initiatives may be necessary to communicate to industry the significance of packaging issues. Legislative initiatives may be either punitive or non-punitive. Punitive packaging legislation places strict controls over the use of packaging and may include the banning of specific packaging materials or types. Non-punitive packaging legislation may set goals and objectives but does not specify what constitutes "good" or "bad" packaging provided that these goals and objectives are met.

In this section, a basis is established for identifying the appropriate roles, if any, of legislative initiatives in achieving the objectives of a national packaging policy. Specifically, the existing regulatory environment in Canada as it affects packaging is reviewed as well as the situation in other countries.

6.1 Packaging Legislation in Canada

Authority for regulating solid waste and, therefore, the management of packaging is shared among federal, provincial, and municipal governments. Municipal governments generally exercise this power through banning specified packaging materials or products from municipal waste disposal facilities. These actions can have immediate and profound consequences on how affected packaging is managed. In major metropolitan municipalities, the banning of specified packaging material from a disposal site can significantly affect how that packaging material is managed on a national basis.

While municipal regulatory action can significantly affect the management of packaging locally, municipalities generally act in accordance with provincially or federally established policy. Municipalities will therefore be major players in implementing a national packaging policy, but are only one among several stakeholders in its development. Primary responsibility for developing a national packaging policy, as well as possible related legislative initiatives, rests with provincial and federal governments. The following analyses focus on the possible role of provincial and federal legislative initiatives in supporting a national packaging policy.

The Federal Role - Because a national packaging policy will aim to develop a national approach to diverting packaging from disposal, the federal government's ability to act, under the Constitution, is of primary importance to such a policy. While there are many areas where the federal government has clear authority to act in the management of packaging and solid waste, there are other areas where federal jurisdiction is still not clear.

The federal government's authority to directly regulate packaging has generally been clear when it concerns the health and safety of Canadians. For example, substances determined to be toxic to the environment are controlled or banned under the *Canadian Environmental Protection Act.*

The *Food and Drug Act* establishes the type and standard of packaging for food and drugs and other products that could affect health. The *Canadian Agricultural Products Act* regulates containers and labelling requirements for a variety of fresh products, such as fruits and vegetables. The *Consumer Packaging and Labelling Act*, which applies to domestic and imported products, prescribes label requirements for prepackaged products sold at the retail level, and limits the size and shape of containers in which products may be sold under specified circumstances.

Self-regulatory initiatives defining waste and packaging management practices, such as procurement and recycling for federal departments and agencies, are also clearly a federal responsibility. There may also be some indirect opportunities for federal action concerning packaging, such as regulating freight rates and national safety standards. For example, preferential freight rates might be given to products with packaging that is reusable, recyclable, or recycled, as compared to packaging made from virgin materials. In addition, in light of technological advancements, a review of existing national safety standards for packaging may reveal areas where regulations regarding the thickness, content, or other characteristics of packaging can be relaxed, thus contributing to source reduction.

Apart from these specific authorities, however, federal jurisdiction to set national targets and standards for regulating solid waste and managing packaging is unclear. Regulatory initiatives of this nature would need to be supported by detailed proposals setting out the specific parameters of the proposed initiatives before being examined in light of existing law. Regulatory activities without such jurisdictional support could be challenged in the courts.

The Provincial Role - With the exception of activities already identified, the provinces have been primarily responsible for managing solid waste and deciding on ways to divert or dispose of packaging. To date, provincial initiatives to divert packaging from disposal have focused primarily on soft drink containers.

Some provinces, e.g., the Maritimes and Newfoundland, Alberta, Saskatchewan, Manitoba, and the Northwest Territories, have taken legislative action on packaging primarily as a result of concern about litter. In the remaining provinces of Ontario, Quebec and British Columbia, the rising costs of disposal and a growing shortage of landfill sites have prompted such action.

Approaches to, and emphasis on, reduction, reuse and recycling vary across the country. Relatively little activity has occurred in the area of reduction, although Ontario has developed its "municipal 4Rs program" which provides grants of up to 50% of costs for projects reducing consumer waste, and an "industrial 4Rs program" which provides comparable support to industry for initiatives emphazing reduction.

Reuse initiatives have generally taken the form of deposit systems aimed at the soft drink industry. Deposit systems are particularly strong in British Columbia, Prince Edward Island and Saskatchewan. British Columbia was the first jurisdiction in North America to implement a deposit system. In P.E.I., only glass, refillable soft drink containers are permitted, and in Saskatchewan, an environmental charge is levied against soft drink manufacturers which use non-refillable containers.

In some provinces, government and industry have cooperated to integrate deposit systems with recycling objectives. The Ontario Multi-Material Recycling Incorporated (OMMRI) project, which was initiated by the Ontario soft drink industry, is one of the most unique examples of such a joint project. It involved the provincial government relaxing its requirements for the use of refillable containers if the soft drink producers met specified levels for recycling of non-refillable containers. An extensive curbside recycling program was implemented through OMMRI jointly with the province and municipalities. Since its introduction, the scope and mandate of OMMRI have been extended.

In Manitoba, the private sector has also developed a recycling system in exchange for decreased provincial requirements for use of refillable containers. And in Quebec, the Quebec voluntary accord between government and the private sector will allocate $100 million in private sector funds to recycling programs over a seven-year period.

6.2 Packaging Legislation in the United States

The Federal Role - In the United States, the federal government has more regulatory powers in the area of solid waste management than in Canada. The U.S. federal government has the mandate to legislate baseline environmental requirements for the country and its regulations supersede any passed by state or municipal jurisdictions. In general, however, the federal government has not taken a leadership role with regard to managing packaging. The Environmental Protection Agency did, however, recently introduce two policies: federal procurement guidelines supporting the use of secondary materials; and, an "Agenda for Action" addressing solid waste reduction.

The prescribed federal role in implementing this Agenda remains a non-regulatory one. Specifically, the Agenda sets a national target of 25% solid waste reduction by 1992, to be achieved through source reduction and recycling; endorses the hierarchy of source reduction, reuse and recycling; and, defines the role of various stakeholders in achieving six objectives.

These objectives are to:

i) increase the information base available in the area of solid waste management;

ii) increase solid waste management planning;

iii) increase source reduction;

iv) increase recycling;

v) reduce the risks associated with solid waste combustion; and

vi) reduce the risks associated with landfills.

Achievement of the Agenda's targets will require major focus on the management of packaging.

The States' Role - A wide variety of legislative initiatives have been taken at the state level to encourage recycling or make it mandatory. These include banning certain packaging products; mandatory recycling requirements; imposing financial penalties for not achieving recycling targets; labelling requirements identifying recyclability; and procurement initiatives to create markets for secondary materials. The rising costs of disposal and recycling have also prompted a confusing array of state taxes and other

means of raising funds to support waste diversion initiatives.

State legislation with respect to source reduction and reuse has been extremely limited with the exception of legislation in several states requiring deposits on beverage containers to encourage their reuse or recycling.

The legislative environment affecting packaging at the state level in the U.S. has been called a "patchwork quilt" of requirements that suffers from lack of national focus. In response to this situation, the Coalition of Northeastern Governors (CONEG), representing Maine, Vermont, New Hampshire, Massachusetts, New York, Connecticut, Rhode Island, Pennsylvania and New Jersey, has established a task force to develop a regional action plan for diverting packaging from disposal. The task force has identified the need for:

- voluntary initiatives by industry;
- commonly agreed-on indices, goals and standards and a mutually agreed-on definition of preferred packaging;
- goals and timetables for volume, weight and toxicity reduction, recyclability and recycled content;
- consistent and coordinated education; and
- financial incentives and deterrents.

The task force has also identified a hierarchy of preferred packaging guidelines which are listed in order of priority.

- No Packaging - Bulk sales are preferable to those requiring packaging.
- Minimal Packaging - If packaging is necessary, only minimum amounts should be used.
- Consumable, Returnable, Refillable/Reusable Packaging - If packaging is necessary, it should be consumed in the use of the product or it should be reused.
- Recyclable Packaging/Recycled Material in Packaging - Using packaging and materials again through recycling is preferable to disposal.

6.3 Packaging Legislation in Europe and Japan

The European Community has issued policy directives for managing containers of liquids for human consumption and is preparing a policy directive on waste plastics. At the national level, in Denmark, Germany and the Netherlands, specific authority exists to regulate packaging. In Austria, all non-recyclable material in packaging will be banned by 1992. Other countries are also developing programs for reducing, reusing and recycling packaging.

In Japan, most solid waste is either recycled or incinerated; 50% is recycled and 34% is incinerated, with the remaining waste being disposed of in landfill sites.

The European and Japanese experiences are not particularly helpful in developing a national packaging policy for Canada because their culture and demography are so different from Canada's.

6.4 Summary

The uncertainty about the federal government's jurisdiction in the area of solid

waste management need not interfere with a national approach to the issue. Canada appears to have a major opportunity to avoid what has happened in the United States, where lack of national leadership has led to fragmented and often reactionary measures by states and municipalities. These measures have often led to confrontations between government and industry. Similar problems can be avoided in Canada and an effective national packaging policy developed through non-regulatory federal coordination and federal support of provincial initiatives. At the same time, regulation - or at least the threat of regulation - as a means of achieving such a policy, cannot be ignored.

The experience of Canadian and U.S. jurisdictions reveals a wide range of actions that can be considered in achieving waste diversion targets. The effectiveness of regulations and regulatory targets, however, will depend upon their practicality and enforceability. Experience, particularly in the U.S., shows that regulation in poorly defined areas will be ineffective or challenged in the courts.

Section 7

Consumer Concerns about Packaging

Consumers play an important role in determining the degree to which reducing, reusing and recycling will be applied to packaging. It is consumers who ultimately make purchasing choices, pay for waste disposal and diversion initiatives, and influence industry and government behaviour. This section provides an overview of consumers' attitudes and behaviour concerning the effects of packaging on the environment.

7.1 Trends in Consumer Awareness and Action

Recent national surveys focusing on consumer awareness of environmental issues generally, and packaging and solid waste management issues specifically, include those undertaken by Environmental Monitor Report (1987, 1988), the Grocery Products Manufacturers of Canada (GPMC, 1989) and the Angus Reid Group (1989). While other surveys have been taken, these three surveys provide a current and comprehensive view of public awareness of these issues.

In 1987, 50 to 60% of Canadians indicated that they were "very worried" about air quality, waste management, depletion of resources and transport of hazardous goods (Environmental Monitor Report, 1987). In 1988, eight in ten Canadians believed that not enough priority was being given to the recycling of waste materials, such as paper, glass and metal. In addition, 70% said they would definitely participate in a curbside recycling program or are already doing so (Environmental Monitor Report, 1988).

In 1989, a Canada-wide survey of grocery shoppers indicated that: women are more concerned about the environment than men; people who work full-time are less concerned about the environment than those who do not work outside the home; people who live alone express more willingness to pay for environmentally-safe products and are more likely to look for recyclable packaging than are couples or families; and, people in the lower income categories expressed a stronger degree of environmental awareness (GPMC, 1989).

Another survey in 1989 indicated that most Canadians now consider the environment the most pressing issue in the country, compared to only 1 in 10 in Fall 1988 and 1 in 20 in February 1988; two-thirds of Canadians would accept a 50% increase in the cost of garbage collection; and, 86% of Canadians support the concept of curbside recycling (Angus Reid, 1989).

These surveys clearly indicate that most Canadians are highly concerned about environmental and solid waste management issues. Consumers' willingness to pay more for "environmentally sensitive" products was also noted: Angus Reid (1989) found that 75% of Canadians would pay more for "environmentally sensitive" products and 80% of grocery shoppers stated a willingness to pay more for these products (GPMC, 1989). In the same survey, however, only about 33% of shoppers said they would actually look for recyclable/biodegradable packaging on a food product, and about 36% that they would check for such packaging on other household products (GPMC, 1989).

This perhaps indicates that, while there is some awareness about packaging waste among shoppers, it has not yet become a major concern.

On the other hand, 83% of Canadians said they would pay extra to support curbside recycling efforts in their community (Environmental Monitor Report, 1988). This is backed up by the fact that 75% of households participate in "blue box" curbside recycling programs where such programs are available. This seems to indicate that the concern of most Canadians about environmental issues can result in action if the correct approach is taken.

7.2 Response to Consumer Concerns

There is some confusion about the industry/consumer relationship. Is it up to the consumer to influence industry by demanding "environmentally sensitive" packaging, or is it up to industry to lead the way by developing such packaging, marketing it effectively and educating the public as to its merits?

There are no definite answers to this question. Environmentally sensitive packaging has been developed in response to both consumer-led and industry-led initiatives. Often, it is not possible to determine who has taken the initiative. Governments and special interest non-government organizations (NGOs) also play a role both in stimulating demand for "environmentally sensitive" packaging and in developing such packaging.

In 1989, Agriculture Canada surveyed food industry executives as part of a study on the implications of environmental issues for food packaging (the food and beverage industries accounted for over half the packaging used in Canada in 1988).

Two-thirds of executives surveyed expressed concern about environmental issues related to waste management and stated that they have changed their packaging because of environmental concerns. Three-quarters of executives agreed that increasing environmental awareness on the part of consumers presents them with a market opportunity. On the other hand, about half the executives were uncertain about the willingness of consumers to pay more for "environmentally sensitive" packaging and products.

Consumer and packaging industries have taken initiatives for many years to reduce the amount of packaging used, i.e., using lighter weight material and encouraging bulk selling. Reusability of some beverage containers, notably glass, has been promoted as an environmental benefit. Much packaging has been routinely recycled, or produced with secondary materials. The rationale for these initiatives, however, has not necessarily been to reduce environmental impact.

Recently, however, the consumer and packaging industries have begun to emphasize the environmental performance of their products. Some grocery retailers have heavily promoted the concept of "green" products. In 1989, some producers began to market products specifically advertised as having environmentally sensitive packaging, such as Proctor & Gamble's "Enviro-Pak" and Pepsi-Cola Canada's Pepsi-Montplas bottle. Despite a unit price that is approximately 15% lower than the plastic bottle, however, the "Enviro-Paks" are selected by only 1 in 5 purchasers. The reasons for this are not yet clear although it does indicate consumers' apparent desire for convenience, and their willingness to pay more for it. It may also indicate that more education is needed or that local stores are

not passing on the price savings to the consumer.

While consumers may be willing to pay more for convenience, they may not yet be willing to pay more for environmentally sensitive packaging. The Pepsi-Montplas bottle, introduced in Quebec in 1989, illustrates this. It is a two-piece, two-litre bottle with a base cup made from thermoformed, recycled polyethylene terephthalate (PET). Pepsi's focus group surveys indicated that cola products are price-sensitive. Furthermore, it was determined that consumers were not prepared to pay more for this package even though it is made partially from recycled materials. Many consumers indicated that they would prefer the package, however, if it were the same price as other containers.

Government initiatives in response to increased consumer awareness of environmental effects of packaging have generally taken the form of legislative or policy initiatives, as outlined in Section 6.

In addition to these initiatives, Environment Canada established the Environmental Choice Program to help consumers identify environmentally sensitive products. Guidelines for several product categories have been approved; these outline the criteria that have to be met for each product category in order to qualify for the EcoLogo symbol. Guidelines for other product categories continue to be developed and the EcoLogo symbol appears on a variety of products that, for example, are made from recycled materials or minimize the use of toxic materials, in keeping with the guidelines for their respective product category.

Many environmental and consumer groups in Canada have a direct interest in the consumer and excess packaging issue, including the Consumers' Association of Canada (CAC). In Ontario, CAC has issued a policy paper on the solid waste management issue, and is actively working to educate consumers on options for waste diversion. Their position is that the use of legislation alone to achieve waste reduction goals would be difficult and inefficient. They recommend the use of advertising, promotion and public education in schools and through the media to make consumers aware of the issues and solutions. In British Columbia, CAC has recently established, with other non-governmental associations, the Environmentally Sound Packaging Coalition to specifically address these issues.

Environmental Action Ontario (EAO), an umbrella organization of over 40 groups, began its Excess Packaging Campaign in 1990. This campaign targets the food industry and its goals are to promote legislation and corporate policies to reduce the waste generated by fast-food outlets, encourage provincial legislation taxing disposable take-out containers, with revenues supporting waste reduction efforts, and encourage supermarkets to reduce excess packaging.

Another example of such an initiative is the "Citizens' Guide to Excess Packaging" prepared by the Waterloo Public Interest Research Group. The group focuses on changing people's attitudes about packaging through public education.

Many industry representatives have expressed concern that, while NGOs can play a major role in educating consumers about reducing, reusing and recycling packaging, some of their information on specific packaging materials and formats is either out-of-date or inaccurate.

7.3 Summary

Several major consumer trends and issues must be considered in developing a national packaging policy.

To begin with, there is much misunderstanding and confusion today about the actual environmental effects of packaging. Consideration of whether a particular packaging is environmentally "good" or "bad" is not based on a life cycle perspective of the packaging (see Section 4).

In addition, many consumers think that packaging makes up a much greater proportion of solid waste than it actually does. Consumers are bombarded with this incorrect and often contradictory information by educators, industries and through the media. Faced with this, people may begin to turn off the entire issue. It is therefore important that consumers be kept well informed about the effect of packaging on the environment and what they can do to improve the situation.

Although opinion polls are providing some interesting and valuable insights into Canadians' attitudes and feelings about environmental issues, information derived from polls is not totally accurate or reliable. People may respond to questions with what they perceive to be the socially-correct answer. This does not necessarily indicate how they actually respond in the marketplace.

As well, although polls indicate a high level of awareness about packaging and solid waste issues, it is not clear that consumers are willing to pay more for "environmentally sensitive" packaging. In fact, consumers' initial response to the Enviro-Pak and Pepsi-Montplas bottles indicates their unwillingness to do so. On the other hand, participation in curbside recycling programs indicates consumers' willingness to act in other ways to support environmentally preferred management of packaging.

Industry has begun to seriously consider the effect of their packaging on the environment, not only because of public concerns but also because it is a profitable way to attract consumer interest. Recyclability has become a "hot" item on the market and provides an opportunity for industry to be seen as the "good guy". While this could be a positive trend, it could also lead to indiscriminate advertising of products as environmentally sensitive as industries jump on the "green" bandwagon.

Finally, convenience appears to be a priority for the average consumer in 1990 and will likely continue to be. Products and packaging must therefore not only be environmentally sensitive and competitively priced to be endorsed by consumers, but they must also be convenient to use.

Section 8

Stakeholder Consultation Process

A wide variety of issues must be addressed in developing a national policy on the management of packaging through source reduction, reuse and recycling. A consultation process was carried out with stakeholders to clearly identify which of these issues are viewed as vital to improved management of packaging. This consultation process has been important in reaching a consensus among governments, industry, and environmental and consumer interests regarding the need for and content of a national packaging policy, as well as how the policy should be developed and implemented.

8.1 The Consultation Process

Initially, the consultation process focused on organizations represented on the National Task Force on Packaging and their memberships. The consultation included exchanging relevant data and information on packaging; identifying key issues in developing a national packaging policy; developing criteria upon which to base a national packaging policy; and priorizing the various possible components of a national packaging policy.

As well as the task force members, various government, industry and consumer/community groups throughout Canada and the United States were consulted on the topic of packaging.

When the first phase of the consultation process ended, a national workshop was held to allow a broader representation of stakeholders to publicly discuss the development of a national packaging policy. Participants were provided with an overview of the development and information on the initial technical findings of the task force. They were then asked to comment on: the six guiding principles for developing a national packaging policy (outlined in Section 8.2); possible policy options to be considered in developing a national packaging policy; the goals of such a policy; and, any regional or sectoral issues to which such a policy should be sensitive.

Based on the preliminary work, the task force agreed that the consultation process had to be expanded to include a broader audience of stakeholders. Specifically, it was felt that a more proactive program was needed to solicit the input of industry and environmental groups across the country. As a result, the following initiatives were undertaken: a newsletter was established to inform stakeholders of progress to date and of the ways they could participate; a series of regional workshops were conducted to solicit specific regional input from invited participants; and, a second national workshop was held to report on the results of the task force and to provide a broad public review of the draft national packaging policy before its submission to CCME.

Feedback obtained through these initiatives has helped to ensure the national packaging policy will be as sensitive as possible to regional and sectoral issues.

8.2 Key Findings

Guiding Principles - Early in the consultation process, the task force adopted the following guiding principles to be used in developing a national packaging policy.

- The underlying principle of the national packaging policy is environmental protection.

- A national packaging policy must ensure that, by the year 2000, the amount of packaging sent for disposal is no more than 50% of the amount sent in 1988.

- A national packaging policy must set out an integrated approach to waste management that incorporates reduction, reuse, recycling, and recovery of materials and energy (the 4Rs). (Later in the consultation process, this was refined to emphasize a 3R approach incorporating source reduction, reuse and recycling, and recognizing that environmentally sound methods of recovering materials, including composting, and energy recovery, are preferred over disposal.)

- A multi-stakeholder approach must be taken in developing a national packaging policy in order to enlist the support of key players from industry, government and special interest and citizen groups identified by the task force.

- A national packaging policy must be applied to all domestically produced and imported packaging products and packaging materials.

- A national packaging policy must be sensitive to, and ideally, compatible with, provincial initiatives.

- A national packaging policy must be consistent with the concept of "sustainable development" and take into account the economic impact of its implementation.

Federal Leadership/Regional Flexibility - The task force recognized the importance of federal leadership in developing and implementing a national packaging policy in order to ensure that the provinces take a consistent approach in their initiatives for better management of packaging. At the same time, it recognized that varying regional issues will demand varying responses by provinces. Consequently, a national packaging policy must be worded in a way that establishes federal leadership and national goals while allowing the provinces flexibility in implementing the policy. The task force also recognized the lead that Canada will be taking internationally in the management of packaging which is particularly important in light of the free trade agreement with the United States.

Environmental Protection and Trade-offs - Environmental protection is the acknowledged underlying principle of a national packaging policy. Therefore, when assessing options for reducing, reusing and recycling packaging, their environmental impact must also be assessed. While a particular initiative might significantly divert waste from disposal, if looked at from an environmental life cycle perspective, it may actually increase the burden on the environment. Therefore, trade-offs might be necessary between environmental gains in some areas and environmental losses in others.

Practical Considerations - The packaging industry employs thousands of Canadians. Thus, when developing a national packaging policy, its possible effect on jobs, the economic viability of industry and the

prosperity of certain regions of Canada must be considered.

In addition, not all parts of Canada have infrastructures in place to collect or process reusables or recyclables. Thus, developing markets for secondary materials was consistently identified as a critical issue.

Need for Packaging - Packaging is sometimes necessary for the protection of health and safety.

Importance of the Consumer - Industry consistently stated that, while they make the package, it is the consumer who decides to buy it. Environmental and consumer interest groups stated that consumers have to choose from the packaging that industry provides. Either way, consumers play a key role in creating a national "conserver ethic".

Equity and Competitiveness - There was consensus that a national packaging policy needs to be applied to all elements of the packaging industry: material producers, package manufacturers, package designers and users, distributors, and retailers. Each has a role to play in ensuring that packaging is reduced, reused and recycled.

Similarly, the Canadian packaging industry should not be hampered in its efforts to compete with imported packaging and packaged goods. A national packaging policy must be applied equally to domestic and imported packaging to ensure a "level playing field".

Funding - Implementing a national packaging policy will require the combined resources of industry and government. A broad range of interests favoured joint industry-government partnerships that commit specific levels of funding over specific time-periods to accomplish specific objectives. Industry expressed concern about funding federal initiatives that overlap with provincial initiatives.

Definitions - A call for clarity was heard throughout the country during the consultation process. Terms, such as reduction, reuse, recyclable, environmentally friendly and biodegradable, must be consistently defined. It was found that a clearer understanding of these terms helped to resolve some of the major conflicts.

Voluntary Implementation - There was consensus across the country that the voluntary implementation of a national packaging policy has many potential advantages. The success of this approach, however, depends on a monitoring mechanism to ensure that the policy's objectives are being met. Measurability and accountability are also important if the voluntary approach is to work. Specific goals must be established that can be used as benchmarks for measuring the success of reduction, reuse and recycling activities in diverting waste. Also, the specific roles and responsibilities of stakeholders in achieving the packaging policy's objectives must be clearly defined.

It should be added, however, that if the policy's objectives cannot be met voluntarily, it was recognized that more aggressive measures will be required, including increased direct regulation of packaging.

Section 9

Recommendations for a National Packaging Policy

The following recommendations are made to divert packaging from disposal through improved management of packaging consistent with objectives expressed by the CCME. These recommendations should be drafted into a national packaging policy acceptable to the major stakeholder groups and interests.

i) A nationally coordinated data collection program should be established to provide more complete data on packaging use and waste generation; to identify the environmental impact of reduction, reuse and recycling activities; and to monitor targets established for waste reduction.

ii) The following targets should be established for reducing packaging waste.

By December 31, 1992, packaging sent for disposal shall weigh no more than 80% of the amount sent in 1988.

By December 31, 1996, packaging sent for disposal shall weigh no more than 65% of the amount sent in 1988.

By December 31, 2000, packaging sent for disposal shall weigh no more than 50% of the amount sent in 1988.

Weight measurements are recommended rather than volume measurements because existing data is based on weight.

iii) The following national packaging policies should be formulated.

- Packaging should have a minimal effect on the environment at all phases of its use. This includes its design, how it is used and how it is managed after use.

- Priority should be given to the management of packaging through source reduction, reuse and recycling. Provincial and municipal governments should work with industry and environmental and consumer groups to develop the appropriate infrastructures to collect and market packaging materials for reuse and recycling. Packaging should be eliminated whenever possible.

- A public information campaign should be undertaken to make Canadians aware of the effects of packaging on the environment and to inform them of how they can participate in reducing, reusing and recycling packaging.

- National regulations should be drafted and implemented, as necessary, to ensure the waste reduction targets proposed in Section 9 (ii) are achieved.

- National packaging policies should apply to all packaging used in Canada, whether it is manufactured in Canada or imported.

- All government policies and practices affecting packaging should be consistent with these national policies.

iv) A multi-stakeholder group consisting of government, industry, environmental and consumer groups should be established to advise CCME on progress towards the waste reduction targets proposed in Section 9 (ii).

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Appendix A

The National Packaging Protocol

The national packaging policy takes the form of a National Packaging Protocol that represents a voluntary commitment by all stakeholders to undertake specific actions to achieve stated policies and milestone targets.

The National Packaging Protocol is reproduced on the following pages.

Canadian Council of Ministers of the Environment
CCME
Le Conseil canadien des ministres de l'environnement

N A T I O N A L

PACKAGING PROTOCOL

Introduction

In April 1989, the then Canadian Council of Resource and Environment Ministers (CCREM) - now the Canadian Council of Ministers of the Environment (CCME) - stated:

> *"Waste management is an urgent and pressing national problem. Some jurisdictions are already running out of landfill sites, in part because Canada is one of the most wasteful nations. For this purpose Ministers have instructed the Waste Management Committee of CCREM to develop a packaging policy for Canada within a broad review of solid waste management opportunities including government purchasing and recycling policies. It was agreed that targets and schedules for waste minimization be established including a fifty percent (50%) reduction in waste generation by the year 2000."*

Canada is a country rich in natural and human resources. A country able to respond to an environmental imperative, and to provide international leadership through the better management of packaging. This document - **The National Packaging Protocol (NAPP)** - recommends six packaging policies for Canada.

The National Packaging Protocol includes the targets to be achieved, relevant background to the development of the Protocol, six policies and the key actions and schedules required to realize each.

In this document a package is defined as "a material or item that is used to protect, contain, or transport a commodity or product. A package can also be a material or item that is physically attached to a product or its container for the purpose of marketing the product or communicating information about the product."

In this document *packaging* can refer to not only the package itself but also to its design, manufacture, use and post-use management.

Background

The per capita consumption of packaging in Canada amounts to an estimated one (1) tonne of packaging per family per year. Packaging performs a variety of valuable social uses including the prevention of spoilage, and the protection of safety and health. In the order of eighty (80) percent of the packaging used in Canada is managed through *disposal* - either to landfills or incinerators.

The disposal of packaging

- represents a loss of natural resources;
- requires increasing financial expenditures to deal with materials not fully utilized;
- uses valuable land, as disposal sites;
- creates various pollutants which can affect surface or groundwater resources and the atmosphere;
- threatens wildlife and causes aesthetic unsightliness when discarded as litter; and
- leaves to our children a legacy of environmental degradation.

In May 1989, the CCME commissioned a National Task Force on Packaging to develop national policies for the management of packaging. The Task Force, composed of stakeholder representatives from across the country, agreed on a set of guiding principles from which to develop a National Packaging Protocol. It was agreed the Protocol would focus on industrial, commercial and household packaging, and would be developed in consultation with key stakeholders from the federal, provincial/territorial and municipal governments, industry, environmental and consumer groups.

The Task Force focussed on the management of packaging through source reduction, reuse and recycling. It did not consider disposal options such as incineration. Also not included within the scope of this work was the effect an intended disposal technique (e.g., incineration or landfill) has on package design.

Since it first convened in June, 1989, the National Task Force on Packaging has:

- prepared a technical data base on the management of packaging; and,
- conducted a Canadawide consultation program to involve stakeholders from across the country in the development of the policies, and to ensure regional input.

Concurrent with development of the Protocol, the Task Force commissioned technical reports entitled:

- The Technical Basis for the National Packaging Protocol: Summary Report;
- Household Consumers and Packaging;
- Packaging Application in Canada;
- Packaging Reduction, Reuse and Recycling Technology Options & Economics;
- Environmental Life Cycle of Packaging;
- Economic considerations in the development of the National Packaging Protocol;
- Legislative Initiatives Relating to Packaging and Implications for the National Packaging Protocol;
- Stakeholder Positions and Response to the Development of the National Packaging Protocol
- Agenda for Action for the National Packaging Protocol.

The result of these activities are six recommended packaging policies for Canada: **The National Packaging Protocol.**

Packaging Policies for Canada

Policy #1 - All packaging shall have minimal effects on the environment

The environmental impact of packaging extends beyond the effect of its disposal: quantity of waste is not the only issue. Resources and energy are consumed to produce and transport packaging. Consideration of broader environmental consequences should be included in an assessment of the impact of packaging.

This will be achieved through the preparation of environmental profiles for each type of package, to be followed by product re-design that minimizes adverse environmental impacts. The policy will stimulate research and the development of new packaging products that have minimal effects on the environment.

Actions:

- The federal government, in consultation with a multi-stakeholder group, will undertake the development of methodologies and guidelines to be used in conducting environmental profiles of packaging, allowing users to compare packaging choices.
- Industry will undertake environmental profiles of their packaging in accordance with the above federal government guidelines, to identify the environmental impacts generated through the manufacture, use and post-use management of their packaging.
- Based on profile outcomes, industry will prepare action plans and schedules to minimize environmental impacts and manage packaging through source reduction, re-use and recycling approaches.
- A multi-stakeholder group will be established to:
  (a) identify research and development initiatives and priorities; and,
  (b) identify new business opportunities.
- Government will work with industry to identify and demonstrate new technologies to minimize the environmental effects of packaging.

Policy #2 - Priority will be given to the management of packaging through source reduction, reuse and recycling

In keeping with a policy which minimizes the environmental impacts of packaging, action will be taken to manage packaging following the hierarchy of source reduction, reuse and recycling.

Actions:

- The federal government, in consultation with industry and the multi-stakeholder group, will establish a "Code of Preferred Canadian Packaging Practices" to guide industry in the design of products and the selection and design of packaging. In the development of the code, consideration shall be given to the following hierarchy:
  1) No packaging
  2) Minimal packaging
  3) Reusable packaging
  4) Recyclable packaging and packaging containing recyclable material.
- National minimum standards will be developed by the federal government, in consultation with the multi-stakeholder group, for secondary/post-consumer material contents in packaging. These standards will take into account health, safety, packaging product performance requirements, and regional limitations.
- Provincial and municipal governments, together with appropriate industries, will develop an infrastructure to collect and market packaging materials for reuse and recycling in order to achieve the targets of these national packaging policies.
- Industry/government partnerships will be formed to develop new and expanded markets for recycled packaging material.

Policy #3 - A continuing campaign of information and education will be undertaken to make all Canadians aware of the function and environmental impacts of packaging

Responsibility for the management of packaging is shared. Achievement of these national packaging policy targets require the combined resources of government, industry, consumer and special interest groups. Education programs are necessary to both inform and motivate purchasers to make appropriate choices, and to support the development of a conserver society.

Actions:

- Provincial governments will develop, with the multi-stakeholder group, education programs for use in schools.
- A national program will be developed by the multi-stakeholder group, to inform all Canadians of the functions and environmental impacts of packaging and to encourage environmentally sound purchasing practices.

Policy #4 - These policies will apply to all packaging used in Canada, including imports

It is important that these national packaging policies be applied to all packaging, both domestic and imported. Regardless of its country of origin, all packaging used in Canada has the potential to require management in this country. This policy will ensure a "level playing field", preventing any packaging product from gaining a competitive advantage at the expense of the environment. Efforts must be undertaken to ensure effective monitoring of border markets against entry of non-complying products.

Actions:

- The federal, provincial and municipal governments will, with sensitivity to the needs of local industries, establish standards and regulations to apply these policies to all packaging used in Canada, including imports.
- The federal government will act as a liaison with other countries to promote the policies contained within this Protocol in relation to international trade.

Policy #5 - Regulations will be implemented as necessary to achieve compliance with these policies

Monitoring the progress achieved through voluntary initiatives may indicate a need for regulatory measures, to ensure that the effects of these policies are felt equally, and that targets are met.

Action:

- Federal and provincial governments will, with the participation of the multi-stakeholder group, enact regulations that are compatible across Canada, and that specify performance requirements, targets, and deadlines for achievements consistent with these policies.

Policy #6 - All government policies and practices affecting packaging will be consistent with these national policies

In the environmental and other public policy areas, existing and new government policies will be reviewed to ensure consistency with these national packaging policies. Health, safety, technical and other factors will need to be assessed to identify conflicts or barriers to the achievement of the objectives of these policies.

Actions:

- Government policies and practices that impede achievement of the objectives of these packaging policies will be identified and where possible removed or modified.
- Government policies and practices such as procurement, will be developed and implemented to support the achievement of the objectives of these policies.

Milestone Targets

By December 31, 1990:
All provinces must have in place a nationally coordinated data collection program to make possible the monitoring of the following targets.

By December 31, 1992:
Packaging sent for disposal shall be no more than eighty (80) percent of the amount sent in 1988.

By December 31, 1996:
Packaging sent for disposal shall be no more the sixty-five (65) percent of the amount sent in 1988.

By December 31, 2000:
Packaging sent for disposal shall be no more than fifty (50) percent of the amount sent in 1988.

FIFTY (50) PERCENT OF THESE DIVERSIONS* SHALL BE ACHIEVED THROUGH NEW SOURCE REDUCTION AND NEW REUSE INITIATIVES. RECYCLING PROGRAMS SHALL MAKE UP THE REMAINDER OF THESE DIVERSIONS.

PERCENTAGE GOALS WILL BE REVIEWED ANNUALLY.

These targets are set as cumulative national goals. In some provinces, the initial target may be higher to correspond to provincial waste management goals. A regulatory framework must be in place to be implemented quickly in the event that targets are not met.

Specific targets will be established for industry sectors, in order to achieve these goals. It is incumbent upon those industry sectors unable to meet these requirements to provide adequate supporting documentation and alternate targets, one year in advance of the prescribed deadline.

Objectives and actions will be reviewed and enhanced during and beyond this time frame to achieve further diversion.

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* Diversion targets to be measured by weight. Recycling programs include commercial, industrial, institutional and municipal initiatives.

Implementation

1. The Canadian Council of Ministers of the Environment will monitor the implementation and effectiveness of these policies.

Monitoring is essential to determine the effectiveness of these policies in contributing to the overall goal of reducing waste by fifty (50) percent by the year 2000.

Monitoring will provide a basis for modifying these policies as necessary, and informing the public of progress.

Action:

- A multi-stakeholder group will be established to adopt a plan of action, develop a monitoring mechanism, track progress, and prepare an annual report recommending plan modifications and target revisions.

2. The Canadian Council of Ministers of the Environment will determine the appropriate funding mechanism for the responsibilities of the multi-stakeholder group; other initiatives will be funded by appropriate governments and industry.

Stakeholders will ensure those objectives for which they are responsible are met. Each will identify appropriate means of financing those responsibilities. The multi-stakeholder group will have joint responsibilities related to all stakeholders.

Actions:

The Canadian Council of Ministers of the Environment should consider a variety of funding options for multi-stakeholder activities. Among these could be:

- charges for waste sent for disposal;
- industry contributions;
- federal and provincial funding.

Members of the National Task Force on Packaging

Canada's National Packaging Protocol is the result of extensive consultation with industry, government, consumer and environmental group representatives from across Canada. The members of the National Task Force on Packaging are:

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MWR & Associates
The Coopers & Lybrand Consulting Group
Recycling Development Corporation
VHB Research and Consulting Inc.
M.J. Ramsey + associates inc.

The National Packaging Protocol was endorsed by The Canadian Council of Ministers of The Environment at their meeting held in Vancouver, Canada, March 20, 1990.

CCME

Canadian Council of Ministers of the Environment
Le Conseil canadien des ministres de l'environnement

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Appendix B

National Packaging Protocol Agenda for Action

A series of initiatives are recommended to ensure the achievement of the milestone targets set out in the National Packaging Protocol. Some of these initiatives relate primarily to setting up the framework to administer and monitor the implementation of the National Packaging Protocol, and to develop regulations that may in future be necessary to meet milestone targets. Other initiatives relate directly to activities to enhance the 3R management of packaging.

Recommended program set-up initiatives include:

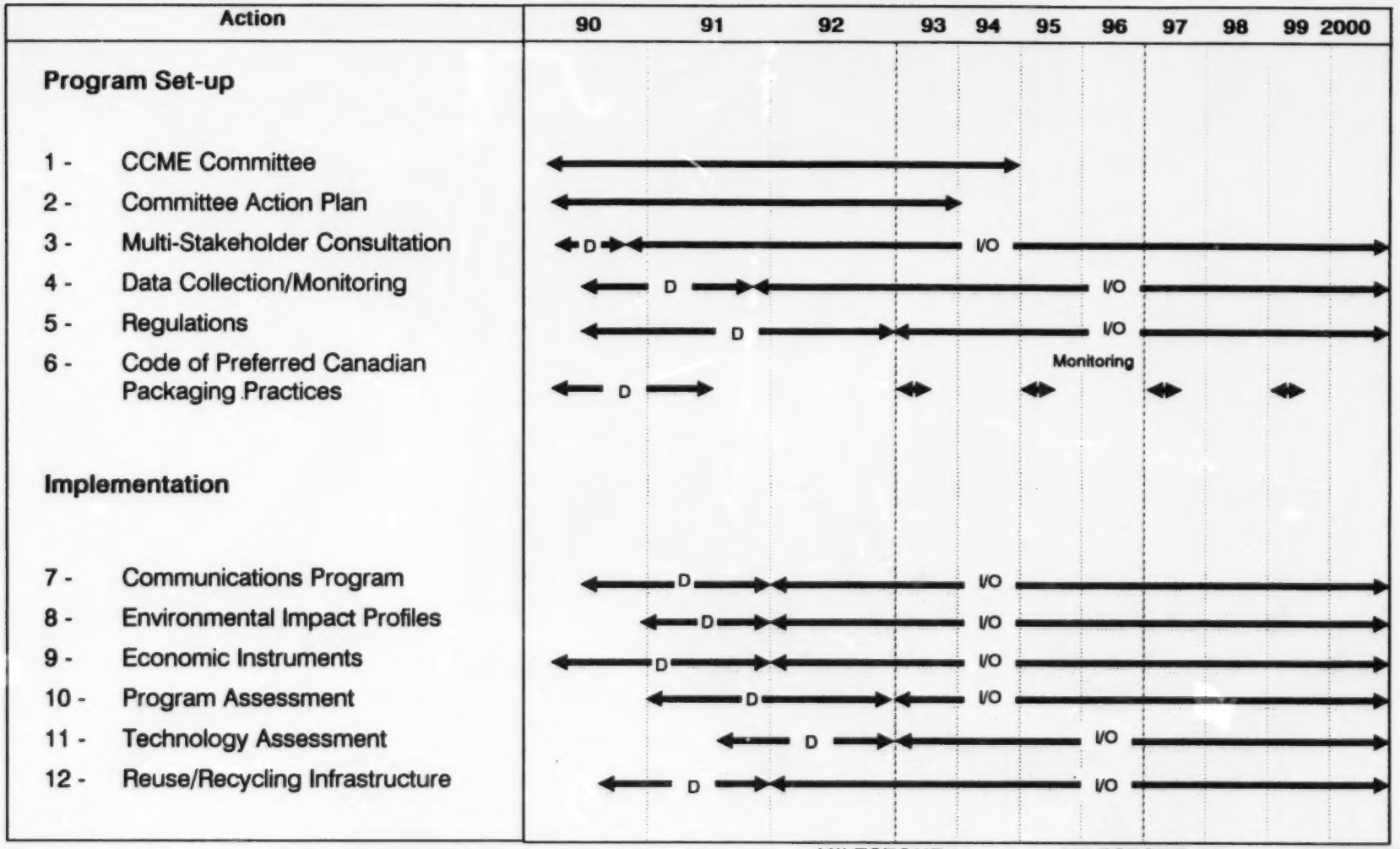
- establishment of a CCME Committee to manage the National Packaging Protocol implementation process;
- establishment of a CCME Committee Action Plan that draws, as appropriate, on the recommended Agenda For Action;
- establishment of a multi-stakeholder consultation body to ensure all stakeholders are consulted on a regular basis regarding implementation of the National Packaging Protocol;
- initiation of data collection and monitoring to measure progress towards meeting milestone targets;
- drafting of regulations to be enacted as necessary to ensure milestone targets are achieved; and,
- development of a Code of Preferred Canadian Packaging Practices to guide the design and use of packaging consistent with the objectives of the National Packaging Protocol.

Initiatives recommended to enhance the 3R management of packaging to achieve the milestone targets of the National Packaging Protocol include:

- initiation of a communications program to make all Canadians aware of the functions and environmental impacts of packaging;
- undertaking environmental impact profiles of packaging to identify and minimize the environmental impact of packaging;
- implementation of economic instruments to ensure the goals of the National Packaging Protocol are economically achievable;
- assessment of packaging 3R technology to ensure appropriate technology is available and applied to the management of packaging;
- assessing progress to ensure the goals of the National Packaging Protocol are met; and,
- development of reuse/recycling infrastructures to ensure systems are in place to meet the milestone targets of the National Packaging Protocol.

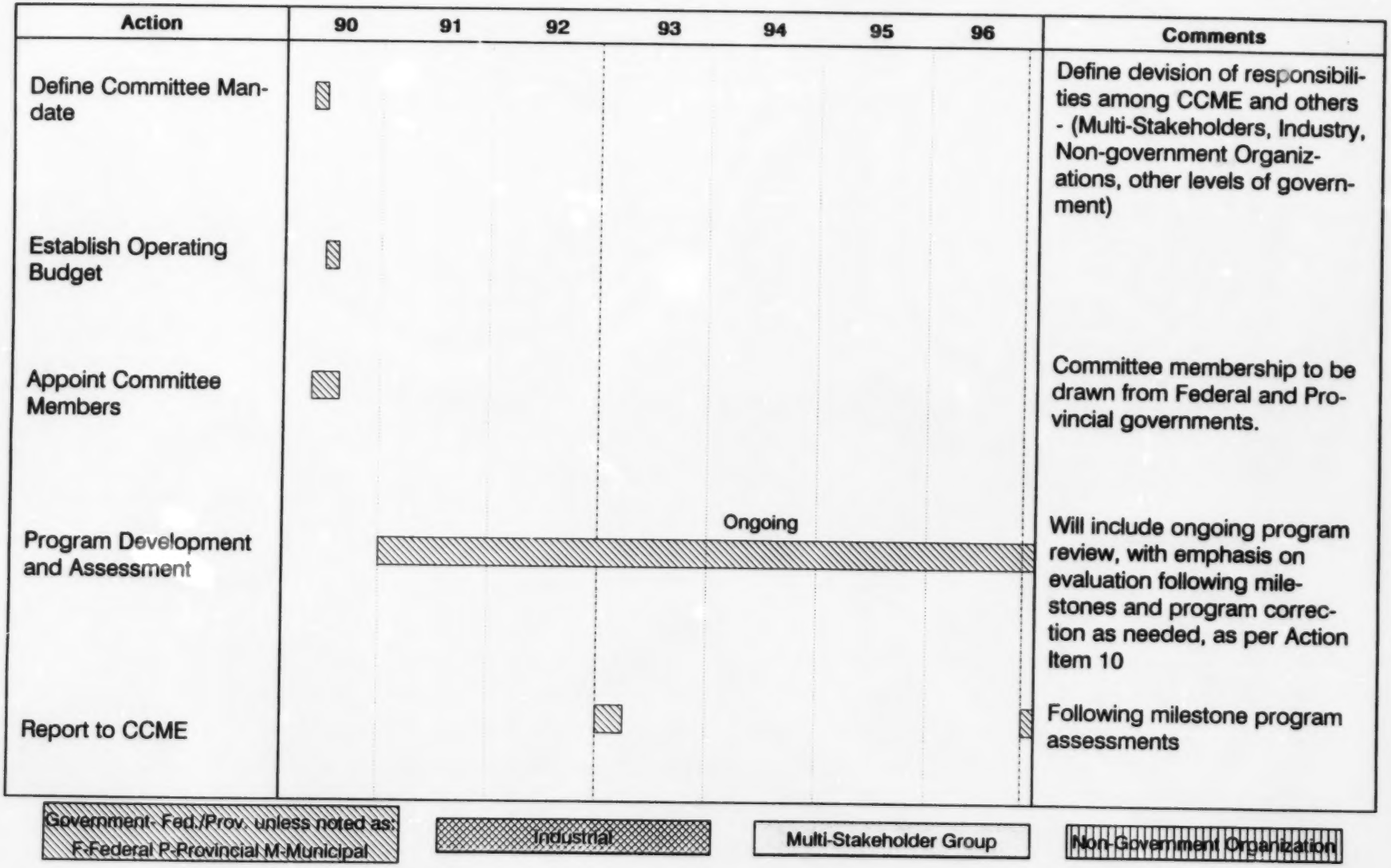
The following series of diagrams identify the specific actions and timing that are recommended to be undertaken to implement each of these initiatives. The first diagram provides an overview of timing associated with each initiative. The remaining diagrams focus on each individual initiative.

NATIONAL PACKAGING PROTOCOL
AGENDA FOR ACTION
1990 - 2000



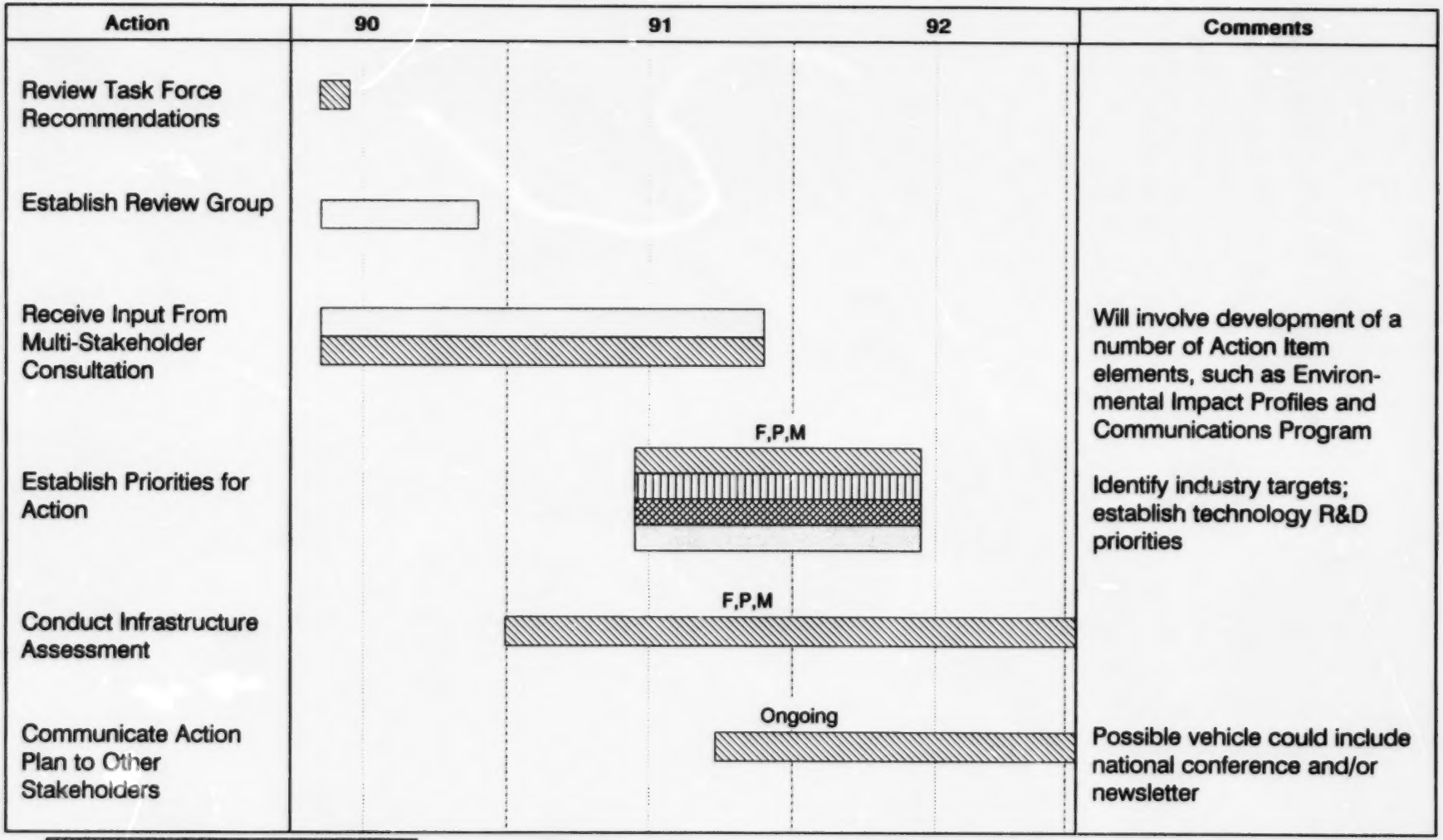
1 - CCME Committee

Objective: To establish a clear path of responsibility for and management of the Protocol implementation process



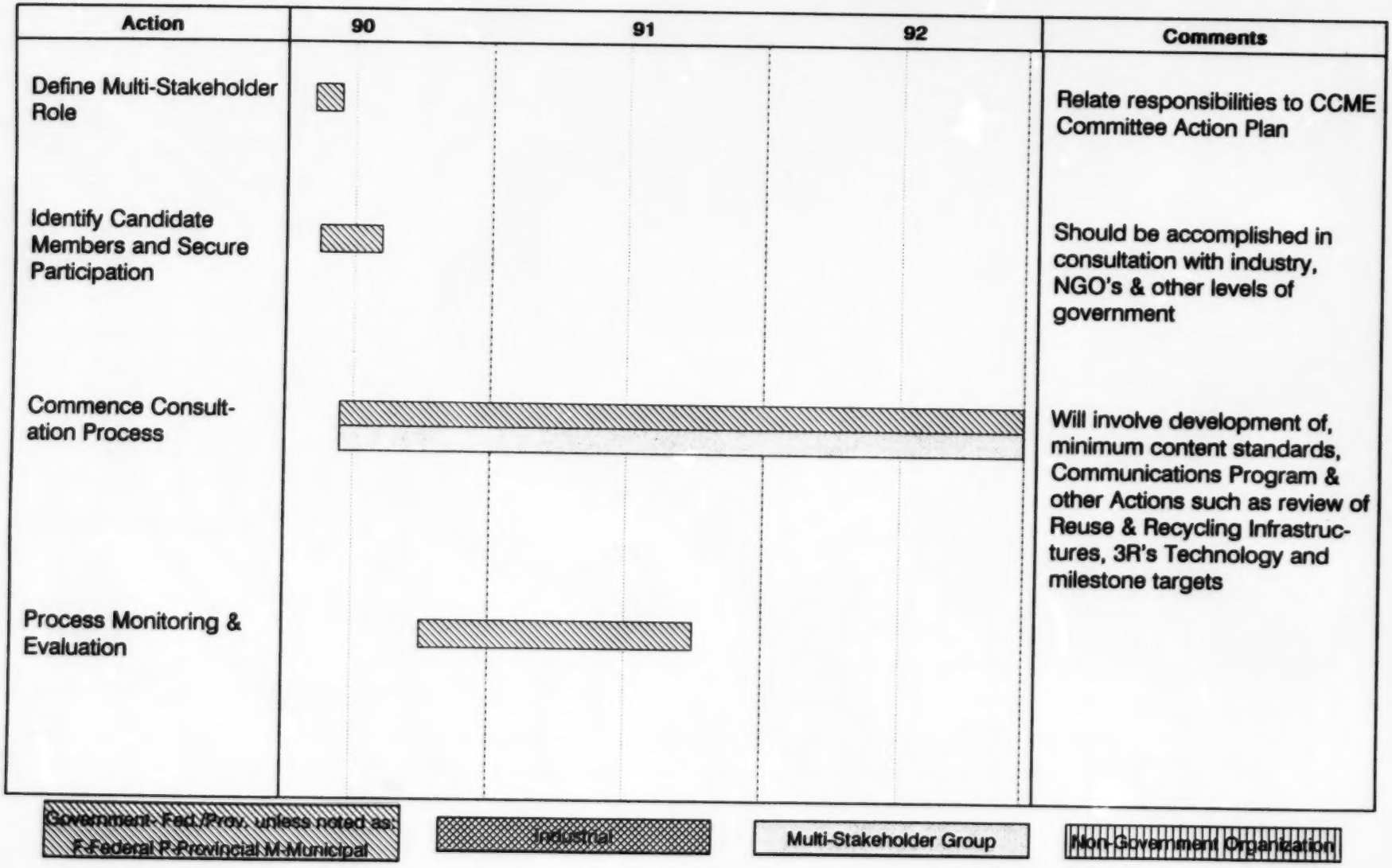
2 - Committee Action Plan

Objective: Develop a detailed action plan to achieve 1992 targets and beyond



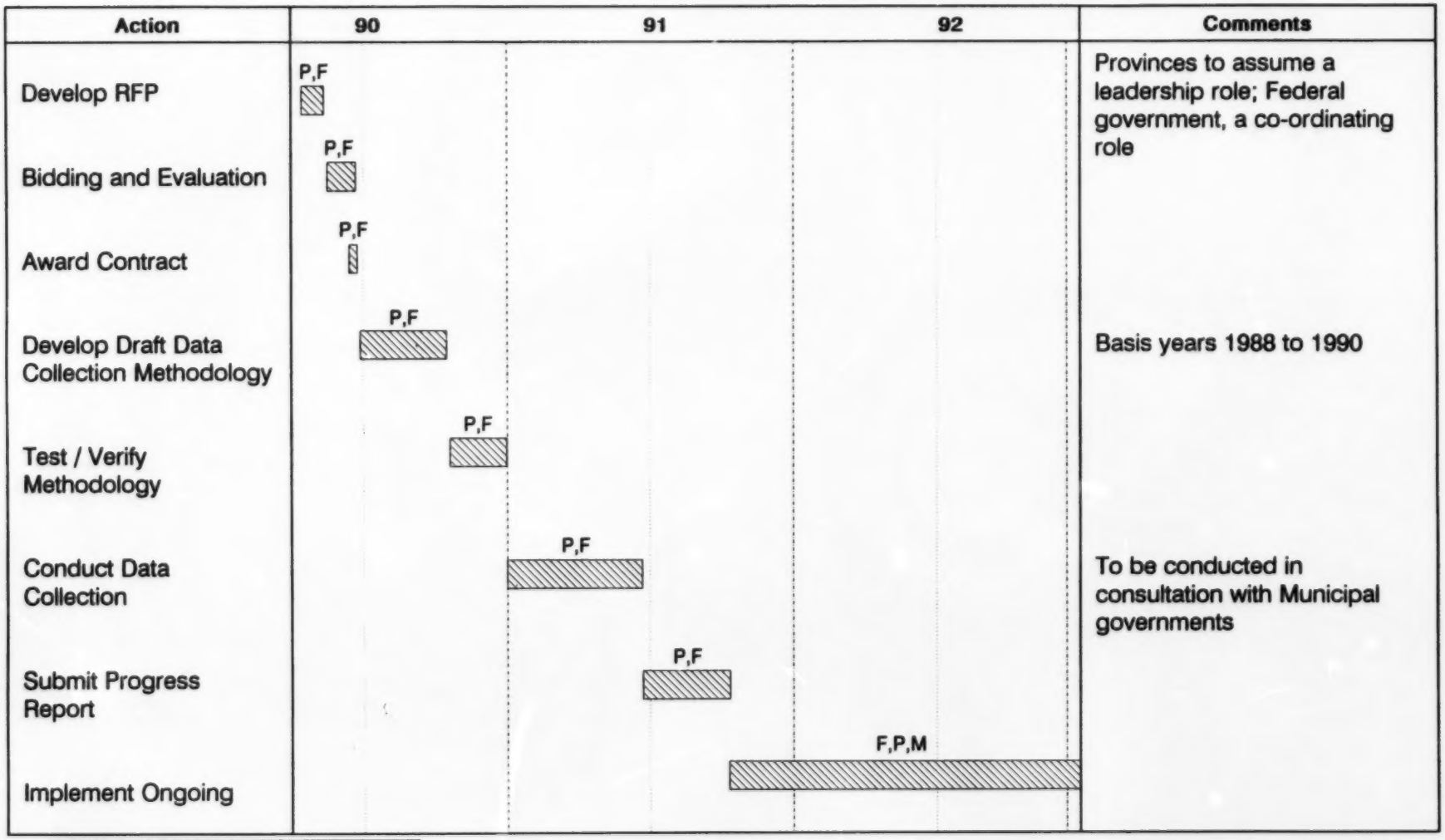
3 - Multi-Stakeholder Consultation

Objective: To ensure proper representation by various stakeholders affected by implementation of the Protocol



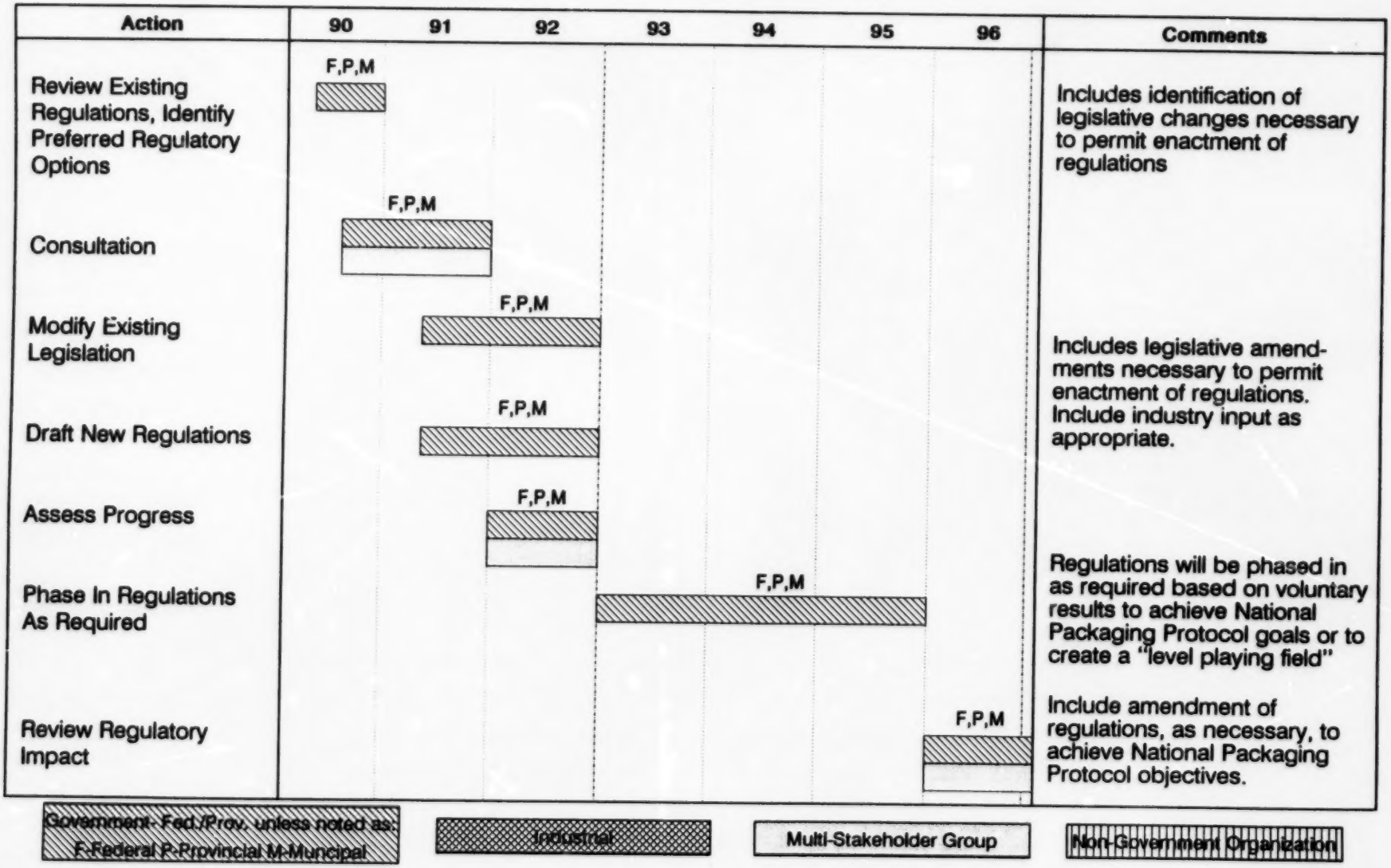
4 - Data Collection - Monitoring

Objective: To establish a basis for accurate measurability of progress toward targets; to allow identification of sectors with greatest diversion potential



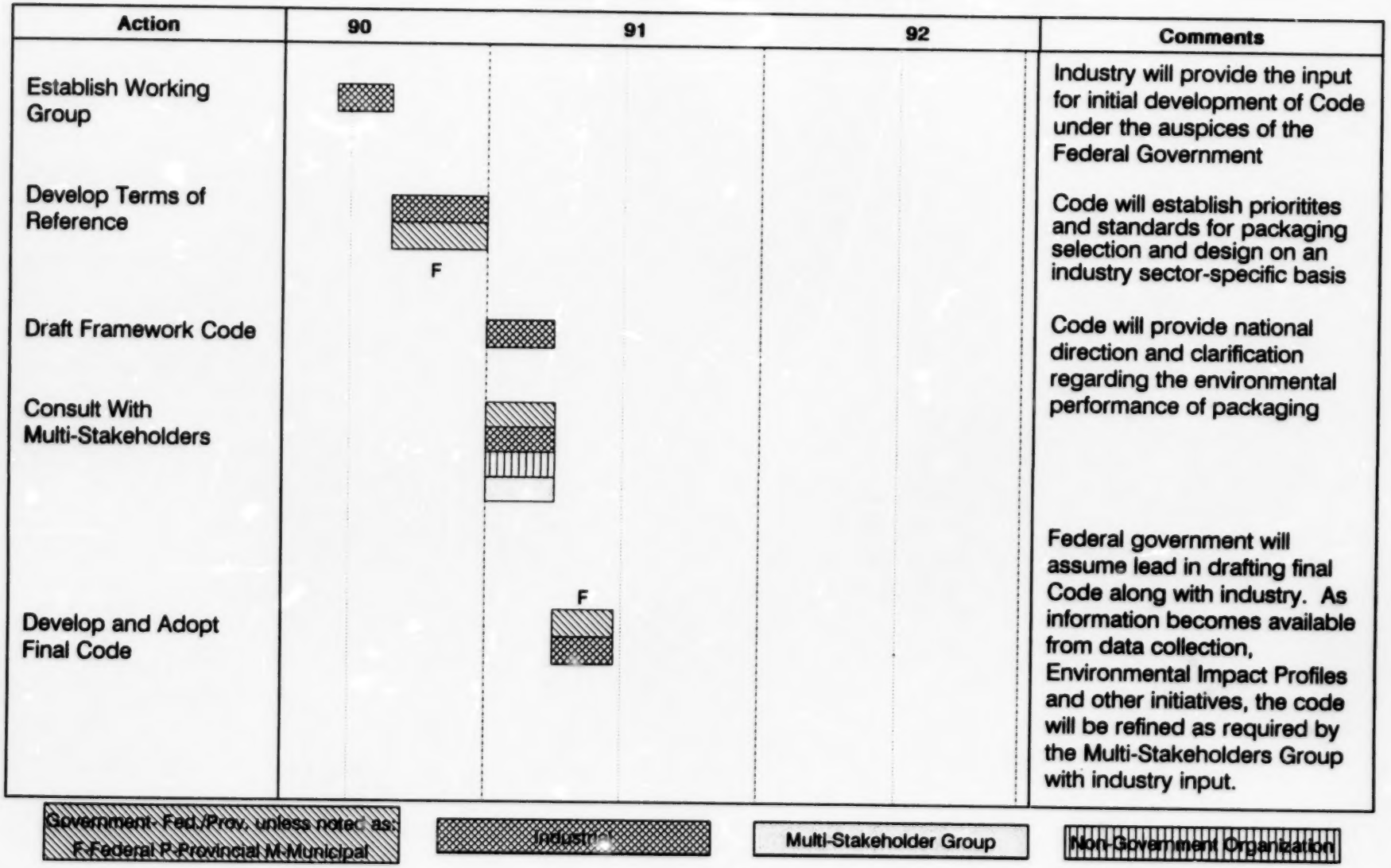
5 - Regulations

Objective: To ensure necessary regulatory support to achieve the goals of the National Packaging Protocol



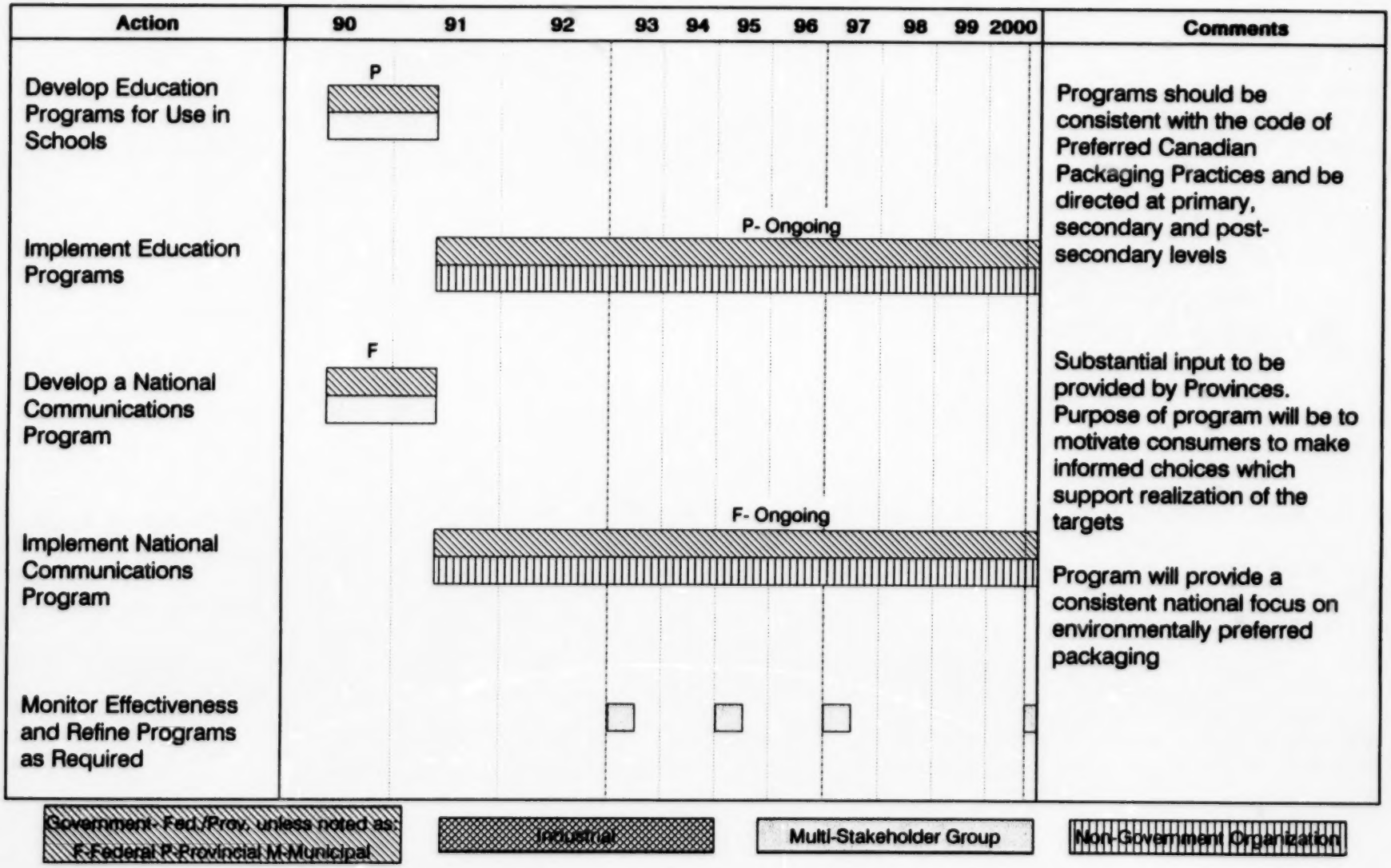
6 - Code of Preferred Canadian Packaging Practices

Objective: To guide industry in the design of products and the selection and design of packaging



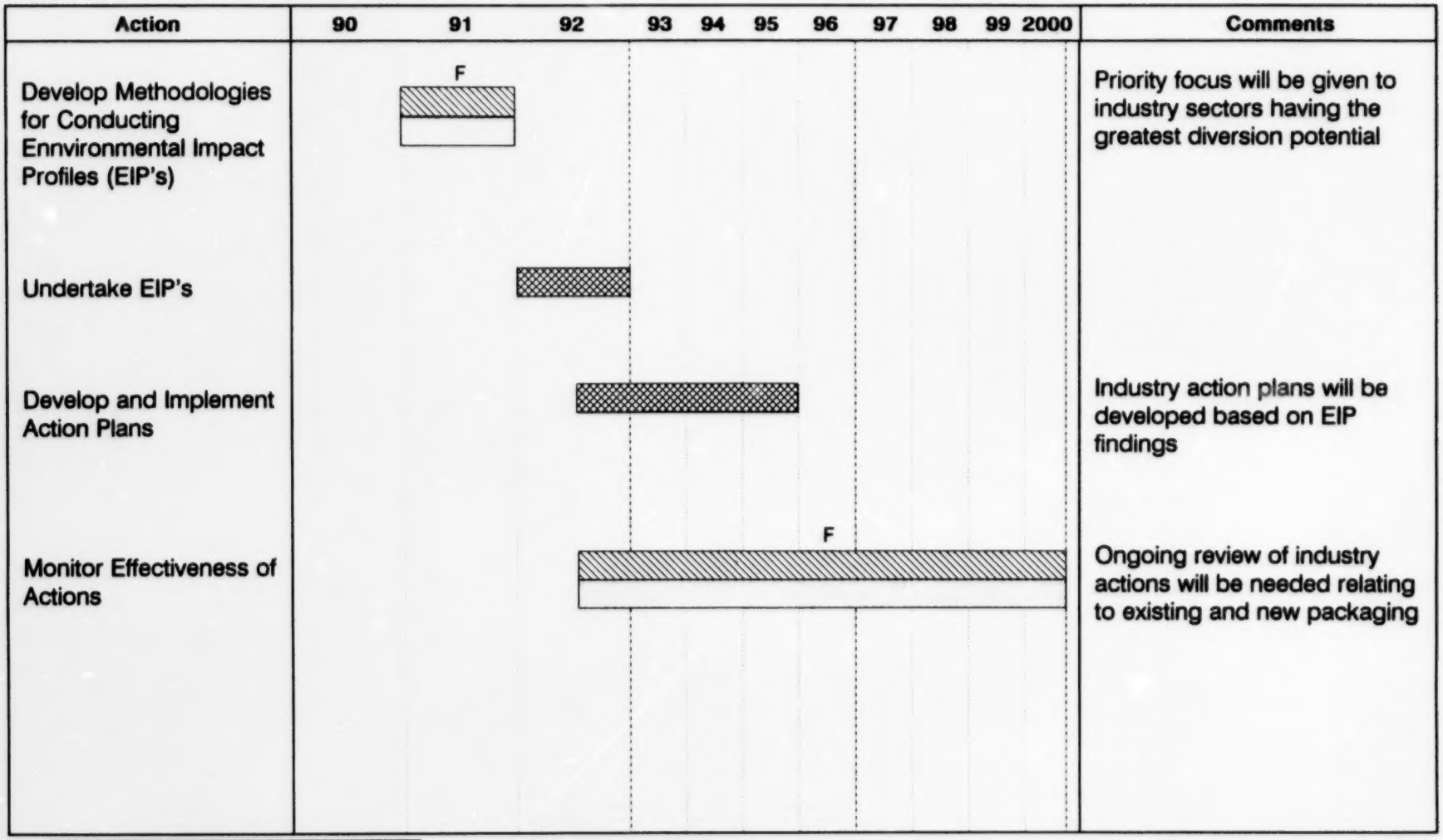
7 - Communications Program

Objective: To make all Canadians aware of the functions and environmental impacts of packaging



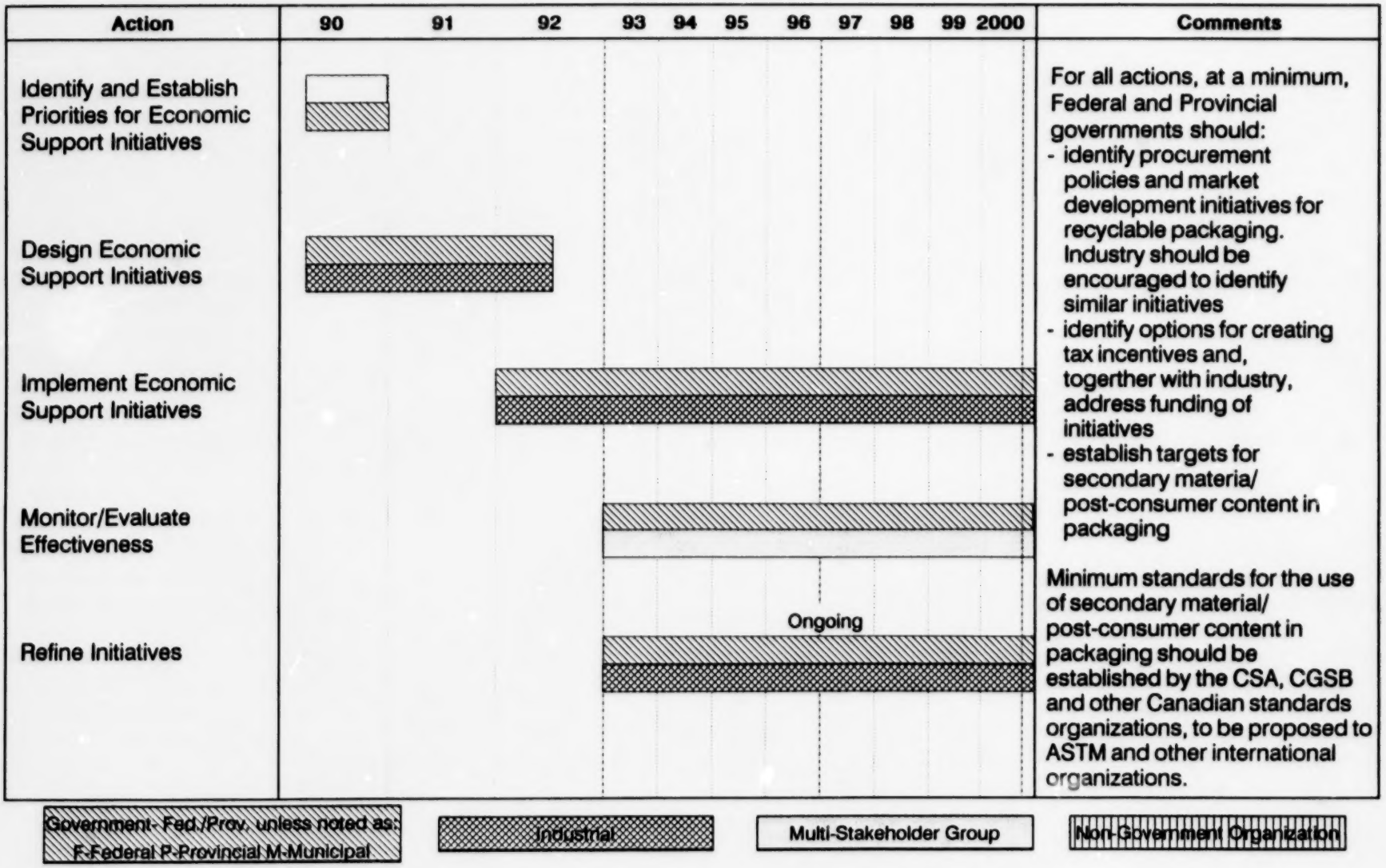
8 - Environmental Impact Profiles

Objective: To identify and minimize environmental impacts generated through the production, use and management of packaging.



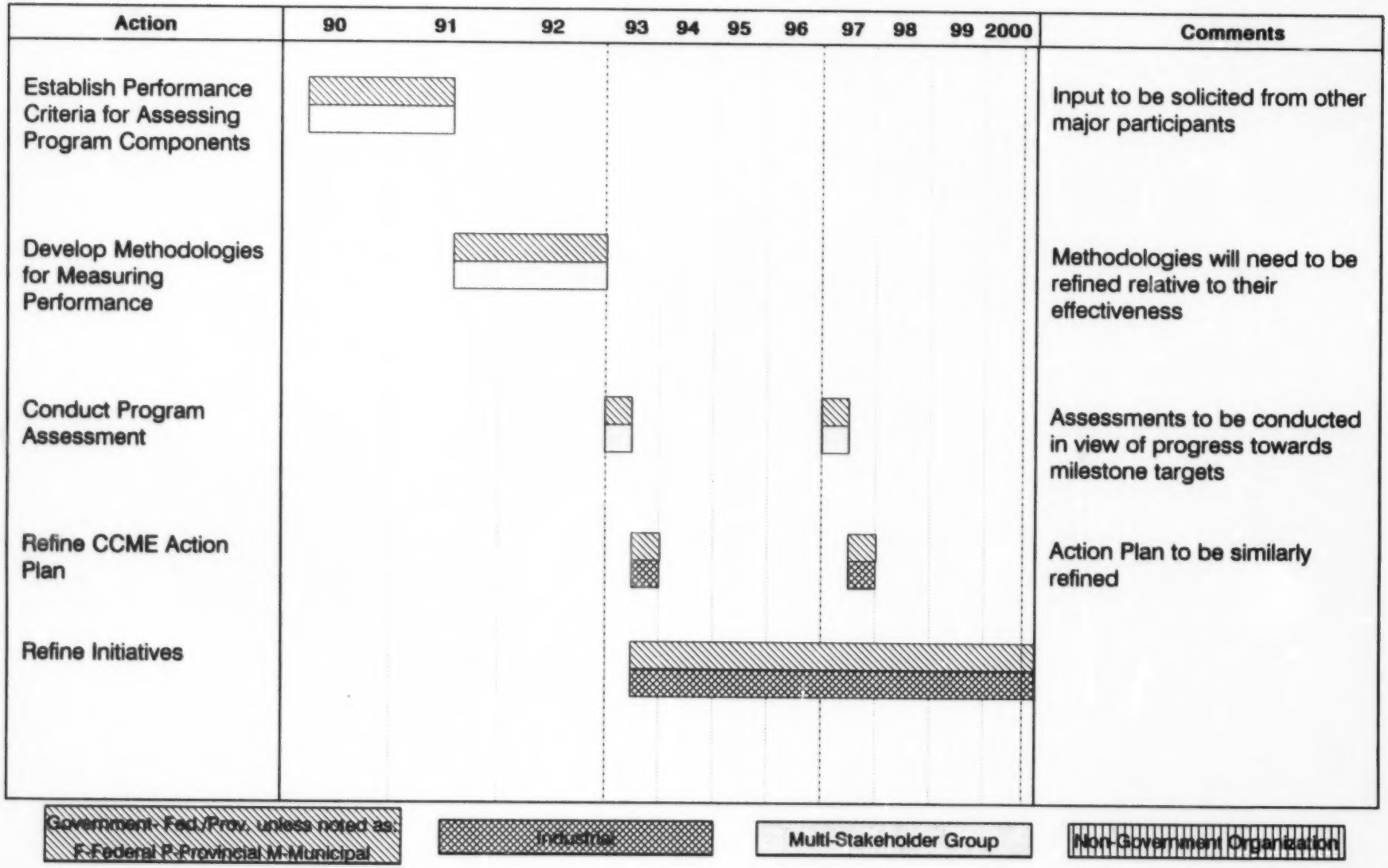
9 - Economic Instruments

Objective: To ensure that the goals of the National Packaging Protocol are economically achievable



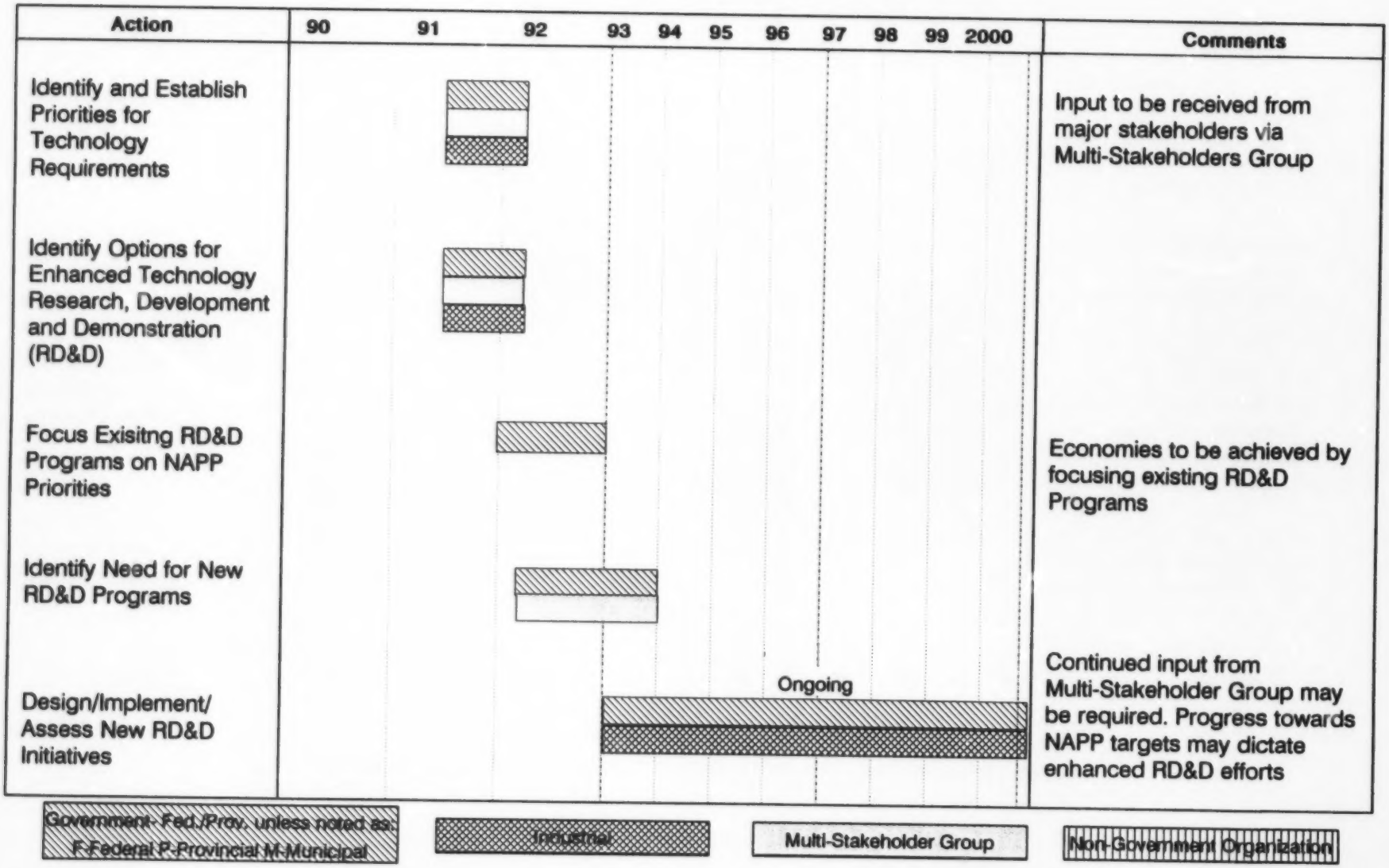
10 - Program Assessment

Objective: To ensure achievement of National Packaging Protocol goals



11 - Technology Assessment

Objective: To ensure the development, availability and application of technology to achieve National Packaging Protocol goals



12 - Reuse/Recycling Infrastructure

Objective: To ensure effective implementation of systems to allow reuse and recycling of packaging